



3 1761 07548299 2





*Presented to the*  
LIBRARY *of the*  
UNIVERSITY OF TORONTO  
*by*

Miss Jean Robinson







# HANDBOOK OF THERAPY

EDITED BY

OLIVER T. OSBORNE, A.M., M.D.

Professor of Materia Medica, Therapeutics and Clinical Medicine in  
Yale Medical School; Ex-Chairman of the Section on Pharmacology  
and Therapeutics of the American Medical Association; Ex-  
President of the American Therapeutic Society; Author  
of "Introduction to Materia Medica and Pharmacology"

NEW HAVEN, CONN.



WITH A CHAPTER ON PRESCRIPTION WRITING

By GEORGE W. HALL, A.M., M.D.

Assistant Professor of Medicine, Rush Medical College; Attending  
Neurologist, Cook County Hospital, Chicago

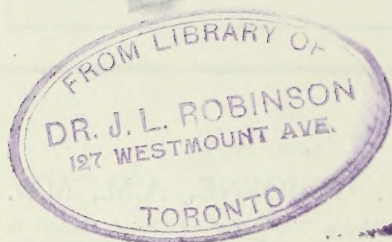
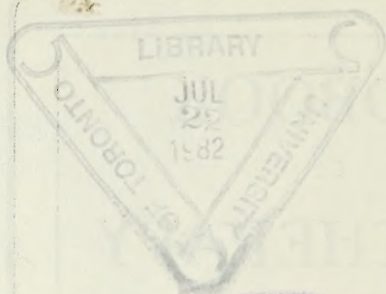
---

SECOND EDITION

---

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 Dearborn Avenue, Chicago



RM

126

H36

1910

## PREFACE TO THE SECOND EDITION

---

The practice of medicine requires not only a tranquil conscience and a clean personality, but also it is one of those few arts which exacts that its practitioners shall possess its knowledge in a form, speaking figuratively, of the finger-tip type—information which has been stored away and yet can be recalled to mind on any occasion and at a moment's notice.

The matter in the therapeutic department of *THE JOURNAL* of the American Medical Association has been commented on favorably by many, and repeated requests have been made for its reproduction in book form. It is because of these comments and requests that this book is issued. From the many articles which have appeared in this department during two or three years, a selection has been made of those which seem to be of most value to the general practitioner.

It is gratifying to note the cordial reception accorded the first edition of this volume. In preparing the second edition, a chapter on "Prescription Writing" has been incorporated, which had already obtained a large circulation as a monograph. The addition adds materially to the value of the book, especially to those for whom prescription writing is not yet an absolutely simple task.

Conditions governing therapeutic requirements are stated as clearly and concisely as possible. Especial pains have been taken to avoid unusual drugs. With rare exceptions, the formulas which the book contains are combinations which can be easily compounded by any pharmacist.

The form of the book has been made such that it can be carried in a satchel or pocket. To enhance its value as a handbook, various tables and compilations of valuable data have been added. One of these is a list of all articles accepted by the Council on Pharmacy and Chemistry. We commend the book to those for whom it is intended—the general practitioner and the medical student—with our best wishes for their success.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.





# CONTENTS

---

|   | PAGE |
|---|------|
| Preface to the Second Edition.....        | 3    |
| Prescription Writing .....                | 9    |
| Introduction .....                        | 9    |
| The Use of Latin.....                     | 9    |
| Necessity of Care in Prescribing.....     | 16   |
| Incompatibilities .....                   | 23   |
| Methods of Administration.....            | 31   |
| Weights and Measures.....                 | 37   |
| The Metric System.....                    | 39   |
| Poisons and Antidotes.....                | 46   |
| Synonyms .....                            | 48   |
| New and Nonofficial Remedies.....         | 49   |
| General Diseases .....                    | 57   |
| Individual Tendencies .....               | 57   |
| Optimism and Pessimism.....               | 59   |
| Diet in Typhoid Fever.....                | 64   |
| Salt in Fever.....                        | 70   |
| Malignant Growths .....                   | 70   |
| Diabetes Mellitus .....                   | 72   |
| Chronic Alcoholism and Its Treatment..... | 79   |
| Alcoholic Cerebral Edema (Wet-Brain)..... | 87   |
| Tobacco .....                             | 89   |
| Anemia .....                              | 95   |
| Warm Water in Scarlet Fever.....          | 98   |
| Syphilis .....                            | 99   |
| Snake Poisoning in the United States..... | 108  |
| Illuminating Gas Poisoning.....           | 114  |
| Obesity .....                             | 117  |
| Rheumatism .....                          | 117  |
| Gout .....                                | 128  |
| Myalgia and Joint Pains.....              | 130  |
| Diseases of the Digestive Organs.....     | 132  |
| Foul Breath .....                         | 132  |
| Antiseptic Gargles and Mouth Washes.....  | 135  |
| Toothache .....                           | 136  |
| Acute Inflammations of the Throat.....    | 137  |

|  | PAGE |
|--|------|
| Cardiospasm .....                        | 139  |
| Gastric Ulcer .....                      | 141  |
| Tapeworm .....                           | 145  |
| Enterocolitis of Young Children.....     | 149  |
| Tropical Dysentery .....                 | 156  |
| Indicanuria .....                        | 161  |
| Constipation .....                       | 163  |
| Diverticulitis .....                     | 167  |
| Gall-Stone Colic .....                   | 168  |
| Diseases of the Respiratory Organs.....  | 175  |
| Colds .....                              | 175  |
| Chronic Bronchitis .....                 | 185  |
| Pleurisy .....                           | 188  |
| Pulmonary Hemorrhage .....               | 190  |
| Asthma .....                             | 192  |
| Hay Fever .....                          | 204  |
| Diseases of the Circulatory Organs.....  | 208  |
| Myocarditis .....                        | 208  |
| Angina Pectoris .....                    | 213  |
| Pericarditis .....                       | 214  |
| Diseases of the Nervous System.....      | 219  |
| Infantile Paralysis .....                | 219  |
| Acute Chorea .....                       | 220  |
| Epilepsy .....                           | 223  |
| Headache .....                           | 225  |
| Sciatica .....                           | 231  |
| Diseases of the Genitourinary Tract..... | 237  |
| Specific Urethritis .....                | 237  |
| Suppurative Cystitis .....               | 248  |
| Diseases of the Kidneys.....             | 254  |
| Chronic Nephritis .....                  | 254  |
| Diseases of the Eye.....                 | 262  |
| Ophthalmia Neonatorum .....              | 262  |
| Sweating in Eye Disease.....             | 264  |
| Blepharitis .....                        | 266  |
| Iritis .....                             | 268  |
| Diseases of the Ear.....                 | 273  |
| Otitis Media .....                       | 273  |
| Diseases of the Skin.....                | 277  |
| Scabies .....                            | 277  |
| Eczema .....                             | 281  |
| Acne .....                               | 292  |
| Warts .....                              | 297  |



|                                 | PAGE |
|---------------------------------|------|
| Impetigo Contagiosa             | 300  |
| Psoriasis                       | 300  |
| Boils                           | 303  |
| Pruritus of the Perineal Region | 305  |
| Ringworm                        | 306  |
| Falling of the Hair in Women    | 309  |
| Chilblains                      | 311  |
| Local Sweating in Tuberculosis  | 312  |
| Lotion to Soften the Hands      | 312  |
| Surgery                         | 313  |
| Shock                           | 313  |
| Chancroidal Bubo                | 317  |
| Felons                          | 318  |
| Ulcers of the Leg               | 319  |
| Bone Tuberculosis               | 322  |
| Obstetrics                      | 323  |
| Toxemias of Pregnancy           | 323  |
| Vomiting of Pregnancy           | 326  |
| Eclampsia                       | 329  |
| Postpartum Hemorrhage           | 333  |
| Infant Feeding                  | 335  |
| Diet                            | 340  |
| Gruels and Starchy Drinks       | 340  |
| Albuminous Drinks               | 344  |
| Physical Remedies               | 346  |
| The Oil Rub                     | 346  |
| The Scotch Rub                  | 347  |
| Massage Cream                   | 348  |
| Water as a Diuretic             | 348  |
| Water in Childhood              | 349  |
| Carbonic Acid                   | 350  |
| Systemic Remedies               | 352  |
| Arsenic                         | 354  |
| Sulphur                         | 356  |
| Ichthyol                        | 359  |
| Hypnotics                       | 361  |
| Bromids                         | 361  |
| Chloral                         | 365  |
| Paraldehyd                      | 370  |
| Sulphonal                       | 373  |
| Trional                         | 375  |
| Scopolamin                      | 376  |

|  | PAGE |
|--|------|
| Circulatory Depressants . . . . .                              | 380  |
| Veratrum Viride . . . . .                                      | 380  |
| Nitrites . . . . .   | 382  |
| Alkalies . . . . .   | 386  |
| General Considerations . . . . .                               | 386  |
| Magnesium Oxid . . . . .                                       | 391  |
| Cathartics . . . . .   | 394  |
| General Considerations . . . . .                               | 394  |
| Euonymus . . . . .   | 397  |
| Cascara Sagrada . . . . .                                      | 398  |
| Podophyllum or Mayapple . . . . .                              | 399  |
| Aloes . . . . .  | 402  |
| Scammony . . . . .   | 405  |
| Rheum—Rhubarb . . . . .  | 406  |
| Jalap . . . . .  | 409  |
| Gamboge . . . . .  | 412  |
| Croton Oil . . . . .   | 413  |
| Elaterin . . . . .   | 415  |
| Colocynth . . . . .  | 417  |
| Antiseptics . . . . .  | 419  |
| Salicylic Acid . . . . .                                       | 419  |
| Guaiacol . . . . .   | 424  |
| Resorcinol . . . . .   | 424  |
| Iodin . . . . .  | 425  |
| Alcohol . . . . .  | 427  |
| Pulvis Antisepticus, N. F. . . . .                             | 428  |
| Miscellaneous . . . . .  | 429  |
| Spray to Disinfect Sick-Room . . . . .                         | 429  |
| Bath Powder . . . . .  | 429  |
| Toilet Ammonia . . . . .                                       | 429  |
| Shampoo Mixtures . . . . .                                     | 430  |
| Yeast . . . . .  | 430  |
| Proprietaries Versus U. S. P. and N. F. Preparations . . . . . | 431  |
| Index . . . . .  | 437  |

# PREScription WRITING

---

[THIS CHAPTER IS WRITTEN BY GEORGE W. HALL, A.M., M.D., ASSISTANT PROFESSOR OF MEDICINE, RUSH MEDICAL COLLEGE; ATTENDING NEUROLOGIST COOK COUNTY HOSPITAL, CHICAGO.]

---

## INTRODUCTION

We purpose giving the fundamental principles employed in the writing of prescriptions. No apology is offered for taking up such an elementary subject, as we believe it will be appreciated by a large number of readers. The whole subject will be discussed, including, in detail, the metric system.

A prescription is the written evidence of a physician's therapeutic ability. It is one of the things by which a physician, just beginning practice, is measured. Not alone are deficiencies in this art confined to the young man just out of college, but seeming carelessness among older practitioners covers up their ignorance and inability to write a prescription as it should be written. Suffice it to say that there is not a sufficient amount of time allotted to the medical student in properly training him in the method of prescription writing. Too many prescriptions are allowed to go into print without the proper endings, and in indifferent language. A prescription is a written formula for medicines, with proper instructions for methods of compounding, to be followed by the druggist, as well as directions for administration to be observed by the patient or his attendant.

## THE USE OF LATIN

In writing a prescription both the ingredients—if it be a compound prescription—and the instructions to the druggist should always be written in Latin. While, as Thornton states, this is not imperative, yet there are many reasons why this should be carried out:



1. Latin is a language which will never undergo change, which insures perpetuity of the name given the drug.

2. Latin is understood in all countries and can thus be **universally interpreted**.

3. The Latin language should be used in writing prescriptions because it is best, as a rule, that a patient should not know what he is taking. There are a great many patients who claim that they are unable to take certain drugs, as, for example, quinin, calomel, morphin, etc., asserting that they are affected in certain peculiar ways by these several drugs. Should a physician prescribing for such peculiar individuals make the mistake which caused them, no doubt, to leave their former doctor, then he will probably be similarly disposed of. So that in such instances the Latin terms may inspire the patient to the belief that he has derived benefit from the *hydrargyri chloridum mite*, whereas calomel would have done him great harm.

4. Another valuable point to be gained in using Latin is that in the Pharmacopeia no official drug has two Latin names, while a prescription calling for "snake-root" may mean "*serpentaria*" or "*cimicifuga*," etc.

#### PARTS OF THE PRESCRIPTION

A compound prescription, to be complete and properly perfected, should be made up as follows:

1. The name of the patient, written in plain English.
2. The superscription.
3. The body of the prescription, or the name of the drugs to be prescribed, properly written in Latin.
4. The directions to the druggist, which should always be written in Latin.
5. Directions to the patient, which, as in case of the first, should be written in plain English, and with definiteness as to time and method of taking.
6. The physician's name plainly written.

The name of the patient should have an important place on the prescription, so that no mistake will be made by any member of the household when more than one member are sick at the same time, and to enable the druggist to know whether the prescription compounded is intended for an adult member of the family or an infant.

The symbol *R* is an abbreviation of the Latin *Recipe*, "take thou." The line drawn across the right lower part of the *R* is said to have been taken from the sign used to indicate Jupiter in the pagan invocations to that god. This ancient mingling of religion with the healing art serves to explain the universal acceptance by the early physicians of the symbol as an awe-inspiring superscription to their formulas.

The direct object of "Recipe" is drachmam or unciam, etc., of the ingredient, as the case may be. Consequently, the names of all the ingredients should be written in the genitive case with their proper endings.

It is usually preferable to administer remedies separately, so that their action can be more accurately observed, the dose increased or diminished, or so that any particular drug can be discontinued altogether. It is, however, at times desirable or necessary to combine a number of drugs for various reasons. In such instances it is proper to observe the following form:

1. The *Basis*, the principal or active ingredient.
2. The *Adjuvans*, or that which assists the action of the base.
3. The *Corrigens*, or that which corrects its operation.
4. The *Constituens*, vehicle or excipient, which imparts an agreeable form.

For example:

|   |     |    |         |
|---|-----|----|---------|
| <i>R.</i>   |     |    |         |
| ( <i>Basis</i> ) Tincturæ Ferri Chloridi.....                           | 12  |    | ℥iii    |
| ( <i>Adjuvans</i> ) Quininæ Hydrochloratis....                          | 2   |    | gr. xxx |
| ( <i>Corrigens</i> ) Magnesii Sulphatis.....                            | 60  | or | ℥ii     |
| ( <i>Constituens</i> ) Glycerini .....                                  | 60  |    | ℥ii     |
| Infusum Cinchonæ ad...  | 240 |    | ℥viii   |
| ( <i>Subscription</i> ) Fiat mistura. <i>Signetur</i> .—Take one table- |     |    |         |
| spoonful three times daily, two hours after meals.                      |     |    |         |

Date.

M. D.

#### LATIN GENITIVE ENDINGS

We wish to emphasize the importance of giving the names of the preparations their proper endings. The inability of the physician to write these names in the proper case and in the proper declension, is an evidence of lack of a good preliminary education.

To illustrate, we give a prescription representing the different endings as follows:

R.

|                                 |    |    |      |
|---------------------------------|----|----|------|
| Tinctura nucis vomicae.....     | 6  |    | 3iss |
| Acidi hydrochlorici diluti..... | 4  | or | 3i   |
| Syrupi simplicis .....          | 12 |    | 3iii |
| Spiritus frumenti q. s. ad..... | 60 |    | 3ii  |

Misce et fiat mistura. Sig.: One teaspoonful after each meal.

In the foregoing it will be seen that in the first preparation, those words ending in *a* are of the first declension and consequently their genitive ending is *æ*, while the word *nux* belongs to the third declension and the *x* (that is, *cs*) is changed into *cis* in the genitive.

In the second ingredient "acidum" is a neuter noun of second declension and therefore should be written *acidi* in the genitive and the words "hydrochloricum" and "dilutum" being adjectives must agree with the noun they limit in the proper gender and case.

In the third preparation "syrupus" being a masculine noun of the second declension, is changed into a genitive and is therefore written *syrupi* in the prescription form.

In the last ingredient, "spiritus," although ending in *us*, is not, of the second declension; but, as an exception to the rule is of the fourth declension, and consequently the ending does not change in the genitive.

Further dwelling on these points, we might observe that nouns of the first declension end in *a* and the ending is changed into *æ* in the genitive; the accusative takes the ending *am* in the singular and *as* in the plural. As far as the nouns concerned in expressing medicinal terms, they end in *us* or *um* in the second declension in the nominative case and *i* in the genitive, as illustrated in the above prescription. However, there are few exceptions to this rule. These exceptions end in *on* in the nominative and *i* in the genitive; as, for example, "erythroxyton," "hematoxyton" and "toxicodendron."

There is a greater variety of endings in dealing with nouns of the third declension. The great majority, however, end in the nominative, singular in one of the following letters: o, l, r, s, and x. We give a few of the nouns as follows for sake of illustration:



## NOMINATIVE.

Mucilago.  
Alcohol.  
Albumin..  
Æther.  
Salicylas.  
Rumex.

## GENITIVE.

Mucilaginis.  
Alcoholis.  
Albuminis.  
Ætheris.  
Salicylatis.  
Rumicis.

Nouns of the fourth declension, as previously stated, have the ending *us* and do not change in the genitive. Practically the only noun of the fourth declension in common use is "spiritus."

## ABBREVIATION.

## PHRASE.

## MEANING.

|                 |                    |                                     |
|-----------------|--------------------|-------------------------------------|
| a or ā ñ        | ana                | of each                             |
| ad              | ad                 | to, up to                           |
| ad lib.         | ad libitum         | at pleasure                         |
| æt.             | ætās               | age                                 |
| alt. hor        | alternis horis     | alternate hours                     |
| aq. bull.       | aqua bulliens      | boiling water                       |
| aq. ferv.       | aqua fervens       | hot water                           |
| aq. font.       | aqua fontis        | spring water                        |
| aq. pluv.       | aqua pluvialis     | rain water                          |
| aut             | aut                | or                                  |
| b.              | bene               | well, good                          |
| bib.            | bibe               | drink                               |
| bis             | bis                | twice                               |
| b.i.d.          | bis in die         | twice daily                         |
| bull.           | bulliat            | let it boil                         |
| c.              | cum                | with                                |
| cap.            | capiat             | let him take                        |
| cap. quant. vis | capiat quantum vis | let him take as much<br>as you will |
| capsu.          | capsula            | a capsule                           |
| chart.          | charta             | paper                               |
| contra          | contra             | against                             |
| coch.           | cochleare          | a spoonful                          |
| coch. amp.      | cochleare amplum   | a dessertspoonful                   |
| coch. mag.      | cochleare magnum   | a tablespoonful                     |
| coch. parv.     | cochleare parvum   | a teaspoonful                       |
| cong.           | congius            | a gallon                            |
| d.              | dies               | a day                               |
| det.; dent.     | detur; dentur      | let it (them) be<br>given           |
| decoc.          | decoctum           | a decoction                         |
| de d. in d.     | de die in diem     | from day to day                     |
| decub.          | decubitus          | lying down                          |
| dil.            | dilue              | dilute                              |
| divid.          | dividatur          | let it be divided                   |
| emp.            | emplastrum         | a plaster                           |
| f. pil.         | fac pilulas        | make pills                          |
| ft.             | fiat               | let it be made                      |
| gtt.            | gutta, æ           | a drop, drops                       |
| haust.          | haustus            | a draught                           |
| hor. som.       | hora somni         | at bed-time                         |

| ABBREVIATION.         | PHRASE.                      | MEANING.                       |
|-----------------------|------------------------------|--------------------------------|
| <i>injlc.</i>         | <i>injiciatur</i>            | let it be injected             |
| <i>in loco. frig.</i> | <i>in loco frigido</i>       | in a cold place                |
| <i>in part. æq.</i>   | <i>in partes æquales</i>     | in equal parts                 |
| <i>iter.</i>          | <i>iteretur, iterentur.</i>  | let it (them) be repeated      |
| <i>liq.</i>           | <i>liquor, oris</i>          | a liquor                       |
| <i>m.</i>             | <i>misce</i>                 | mix                            |
| <i>macer.</i>         | <i>maceretur</i>             | let it be macerated            |
| <i>mane</i>           | <i>mane</i>                  | in the morning                 |
| <i>m. bene</i>        | <i>misce bene</i>            | mix well                       |
| <i>mist.</i>          | <i>mistura</i>               | a mixture                      |
| <i>mit. tal.</i>      | <i>mitte talis</i>           | send of such                   |
| <i>ne rep.</i>        | <i>ne repetatur</i>          | do not repeat                  |
| <i>ne tr. s. n.</i>   | <i>ne tradas sine numero</i> | do not deliver unless paid for |
| <i>no.</i>            | <i>numero</i>                | in number                      |
| <i>non</i>            | <i>non</i>                   | not                            |
| <i>O. D.</i>          | <i>oculus dexter</i>         | right eye                      |
| <i>omn. hor.</i>      | <i>omni hora</i>             | every hour                     |
| <i>omn. noct.</i>     | <i>omni nocte</i>            | every night                    |
| <i>O. S.</i>          | <i>oculus sinister</i>       | left eye                       |
| <i>part. vici.</i>    | <i>partitis vicibus</i>      | in divided doses               |
| <i>post. cib.</i>     | <i>post cibos</i>            | after eating                   |
| <i>p. r. n.</i>       | <i>pro re nata</i>           | as needed                      |
| <i>pulv.</i>          | <i>pulvis, eris</i>          | a powder                       |
| <i>q. s.</i>          | <i>quantum sufficiat</i>     | a sufficient quantity          |
| <i>R</i>              | <i>recipe</i>                | take (thou)                    |
| <i>red. in pulv.</i>  | <i>redige in pulverem</i>    | reduce to powder               |
| <i>sat.</i>           | <i>satis</i>                 | sufficient                     |
| <i>sic.</i>           | <i>siccus</i>                | dried                          |
| <i>sig.</i>           | <i>signa, signetur</i>       | let it be labelled             |
| <i>simp.</i>          | <i>simplex, simplicis</i>    | simple                         |
| <i>ss</i>             | <i>semis</i>                 | one-half                       |
| <i>tab.</i>           | <i>tabella, æ</i>            | a tablet, tablets              |
| <i>ter</i>            | <i>ter</i>                   | three times                    |
| <i>t. i. d.</i>       | <i>ter in die</i>            | thrice daily                   |
| <i>trit.</i>          | <i>tritura</i>               | triturate                      |
| <i>troch.</i>         | <i>trochiscus</i>            | troche                         |
| <i>ung.</i>           | <i>unguentum</i>             | ointment                       |
| <i>ut dict.</i>       | <i>ut dictum</i>             | as directed                    |

## DIRECTIONS TO COMPOUNDER AND TO PATIENT

Referring again to our prescription, the directions to the druggist, it will be noticed, are written in the Latin. The word *misce* means, when translated, "mix thou." The word *fiat*—meaning "may be made" is in the subjunctive mood, therefore, in the above, *mistura* is in the nominative case the subject of *fiat*. If a number of capsules were ordered instead of a mixture then *fiat* would have to be changed from the singular to the plural, as

follows: *fiant capsula*, capsulae being in the nominative case, plural, the subject of *fiant*.

The directions to the patient are of extreme importance, and this is where the physician should express himself concisely, clearly and positively. It should be stated how, the medicine should be taken; that is whether in water or otherwise, and whether the water should be hot or cold when the medicine is poured into it. For instance, we know that sulphonal, to produce the best results and promptly, should be dissolved in hot water, while if chloralamid is dissolved in hot water it is easily decomposed. It should also be stated definitely whether the drug should be given before meals or after meals on account of the liability of producing gastritis, or whether it should be given at night or in the morning. We know that it usually takes from twelve to twenty hours for the lapactic pill to act, and consequently it is better to give it on retiring, while magnesium sulphate will produce much better effects if given on rising in the morning with the patient in the upright position. We urge the physician to be positive with patients as to the promptness of taking the medicine. If it is a matter of indifference to the physician it will soon be of greater indifference to the patient.

In writing out the ingredients it is much better to write them in full and not abbreviate. In this way mistakes on the part of the druggist will be obviated. While there can be no objections in abbreviating some of the terms, a few illustrations taken from Wilcox may serve to show how mistakes may arise:

Acid. hydroc. (may be Acidum hydrochloricum or Acidum hydrocyanicum).

Ext. col. (may be Extractum colchici or Extractum colocynthis).

Hyd. chlor. (may be Hydrargyrum, Hydras, Hydrochloras or Hydrocyanicus).

Sulph. (may be Sulphur, Sulphid, Sulphate, or Sulphite).

In this connection it does not come amiss to mention the importance of writing plainly and legibly. More than one case is on record where suits have been instituted against druggists for improperly compounding a prescription, who in turn tried to shield themselves behind the hieroglyphics of the physicians. A physician of prominence in a large city, who writes an unusual

number of prescriptions, has the reputation of writing so illegibly that only one druggist in the entire city dares to attempt to compound the prescription, and even he at times has to inform the patient that it will take some time to fill the prescription in order that he may quietly consult this physician concerning the ingredients involved.

### *NECESSITY OF CARE IN PRESCRIBING*

The necessity of avoiding ambiguity has already been dwelt on to some extent. Every prescription, however, should be carefully read by the writer in order that due care may be taken to avoid omissions or mistakes in the size of the dose given and to review carefully the directions to the patient. The young physician experiences no little difficulty in calculating properly and quickly the doses of each ingredient if he writes a compound prescription, and especially is the difficulty increased if he desires to express the amounts in the form of the metric system.

In calculating the size of the dose many things must be taken into consideration which include some of the following important points:

1. The age of the patient.
2. The form of administration, if given by the mouth.
3. The idiosyncrasy of the patient.
4. The action of each ingredient individually and combined.
5. The frequency of administration.
6. Whether the ingredients are fugitive or cumulative in action.
7. The methods of administration.
8. The avoidance of incompatibility.

### *AGE OF THE PATIENT*

Narcotics and opiates should be administered to children with great care. There can be no doubt that opiates are prescribed a great many times in treating the summer diseases of children where other and milder preparations would be of far greater service. While children and infants are very susceptible to the action of opiates, on the other hand they can withstand the effects of cathartics in much larger doses, comparatively speaking, than can adults. For instance, infants only a few months old may be given the mild chlorid of mercury in

doses of gr. 1-10 (.006) to gr. 1-6 (.04) every hour until several doses are given if necessary, which is practically equal to the dose given an adult. In prescribing for the aged, however, extreme care must be observed in the administration of cathartics. Cases have been reported in which cerebral hemorrhage and consequent hemiplegia have resulted from prescribing too large doses of active cathartics. Such results might be expected when arteriosclerosis is present in a marked degree and when the cerebral arteries, lacking the proper resiliency, give way to the undue pressure produced by the overstraining at stool as a consequence of the purging.

#### ADMINISTRATION BY THE MOUTH

In speaking of the second point, the age also of the patient must be borne in mind. Children can not swallow a capsule, and it is with difficulty that they can be induced to take medicines which are unpleasant to the taste. Therefore, in prescribing liquid preparations for children a palatable vehicle should be prescribed, and when prescribing it in the powder form the same observance as to palatability must be carried out. For illustration, instead of prescribing quinin sulphate for children, some other preparation of quinin devoid of this objectionable taste should be used, such as the tannate of quinin, which will be readily taken by the patient. It is not uncommon to have requests from adults not to give them medicine in capsule form owing to their inability to swallow the capsule.

#### IDIOSYNCRASIES TOWARD DRUGS

As a rule male patients bear larger doses of medicine than female. However, in either sex idiosyncrasies are manifested when certain drugs are given. For the sake of illustration, mention may be made of certain untoward symptoms produced by the following drugs:

*Quinin* sulphate produces very readily, in some individuals, the pronounced ringing in the ears, in others nausea, and in others again it produces a marked eruption on the body. The hydrobromate of quinin is sometimes tolerated in such cases as the above, and by giving the bisulphate hypodermically the nausea can be elimi-



nated. We speak of giving the quinin bisulphate hypodermically because it is the most soluble salt of the alkaloid, being soluble in about 15 parts of water.

*Potassium iodid* can not be tolerated by certain susceptible individuals, as it causes headache in some, and in others the marked eruption on the skin even though given in small doses. It may also be accompanied by other symptoms of iodism.

*Strychnin* sulphate induces occasionally an increased degree of nervousness; susceptibility is rare when we consider that in the form of *nux vomica* it is given as much or more than any other drug in the pharmacopeia.

*Arsenic* also has to be carefully administered and the patient closely watched on account of poisonous symptoms developing in certain cases after the use of even very small doses of the drug. Vomiting may occur, due to its effect upon the stomach. Arsenic is better tolerated when prescribed in the form of Fowler's solution and given well diluted in water.

*Cocain*, when applied locally to the membranes of the nose or mouth, even in dilute solutions, will cause dizziness and fainting in some cases, whereas 10 per cent. solutions may be applied several times in others with scarcely more than a full sensation in the head.

*Opium* may act in various ways. This may be due to the fact that it has many alkaloids, the four most important of which are codein, morphin, heroin and thebain, each having an entirely different action. As Brunton puts it, they form a chain, at one end of which is a convulsant and at the other a powerful hypnotic. Thus, some susceptible individuals may be peculiarly influenced by the convulsant and others by the powerful hypnotic.

*Chloral* is another drug which although physiologically a sleep-producer will in certain cases bring on delirium and general cerebral excitability.

The administration of *iron* in its different forms may produce a sensation of fulness in the head which is an unpleasant feeling to the patient.

Dwelling a little longer on the idiosyncrasies, it will be of interest to relate the action of some of the foregoing drugs on animals as contrasted with their action on the individual. This is due in the majority of cases

to the lack of development of the nerve centers and nervous system generally in animals. The general class of emetics will not produce vomiting in the rodent animals. A rabbit is not susceptible to effects of morphin, it being capable of withstanding thirty or forty times the amount of the human adult dose. Atropin exercises no influence on the heart of the rabbit. In birds, in which the temperature is much higher than in mammals, morphin produces no hypnotic action, but it has a marked antipyretic effect. Snails are said to withstand much larger doses of strychnin than man, easily explained, however, on account of the low developed nervous system in that mollusc.

#### RELATIONS OF MEDICINES

The synergistic action of medicines must necessarily be borne in mind when one is writing a compound prescription; otherwise the results might prove disastrous to the patient. It should also be remembered that there is no organ of the body which is not subject to the action of more than one drug; a prescription may contain some constituents which act similarly upon one organ and dissimilarly upon others.

In writing a simple prescription, the physician, knowing the physiologic dose and action of the drug, will meet with no difficulty; but by the combination of two or more active ingredients whose physiologic action is directed especially toward one organ, the calculation of the dose of each demands closer scrutiny.

The action of heart tonics, to illustrate more fully, may be referred to in this connection. There are many in this class, those in more common use being digitalis, strychnin, strophanthus and spartein. If the condition of the heart should demand digitalis one would ordinarily prescribe 10 to 15 minims of the tincture at a dose, every four or five hours.. However, if the combined action of digitalis and strychnin would better serve the purpose, the dose of each should be reduced accordingly. Such combination is commonly of great service, for the simple reason that the same effects are produced through different routes—digitalis acting upon

the heart muscle directly and stimulating it, and strychnin producing the same results through the nerve supply.

Purgatives produce much better results and fewer subjective symptoms when a number of them are combined. The reason assigned is that, as different preparations act upon different parts of the intestine, the entire canal is in this way best reached. Catharsis induced by a medicine which irritates the inner lining membrane of the intestines alone is not as satisfactory as when a mild irritation of both the membrane and muscular coat is produced.

Butler gives a good illustration as to the value of the combining of remedies which act similarly upon some organs and dissimilarly upon others, as demonstrated by the effects of chloral and morphin. Chloral produces sleep by its action on the brain, and also has a distinct influence on the heart, but none on the intestinal tract. Morphin acts on the brain and has little influence on the heart, but has a powerful effect on the intestine. The two produce a combined influence on the brain, promoting sleep, with the least possible disturbance of the heart and intestinal tract.

Sometimes a remedy is required, extremely nauseating to the taste, which the patient will refuse to take; if it can be combined with a menstruum, making it a pleasant preparation, the proper results will be obtained. In prescribing for children the preparations should be made pleasant and palatable, otherwise the physician will obtain the ill-will of his patient, which is a great obstacle in the way of a successful management of the case.

The chief object of every practitioner, however, should be to prescribe as few remedies as possible and to avoid the use of any medicine, the physiologic action of which he is not familiar with. It is very desirable to administer some remedies alone. In the treatment of certain stages of syphilis, for example, potassium iodid is of great service, given in gradually increased doses until 90 to 150 drops of the saturated solution, perhaps, are given three times a day; consequently it would not be practicable or convenient to combine this with a menstruum because of the difficulty in graduating the dose. Arsenic is another drug of specific action, and in order to obtain its best physiologic effects, gradually increased doses should be given, in the form of Fowler's solution.

which is of 1 per cent. strength; to administer it in any other form would make it difficult to graduate the dose in such a manner that no disturbance of the stomach would follow.

#### FREQUENCY OF ADMINISTRATION

The rapidity with which a drug acts should govern, ordinarily, its frequency of administration. This rapidity of action is dependent to a great extent on the physical condition of the patient when the medicine is given. Medicines, however, as patients, may possess characteristics peculiar to themselves. These characteristics include their promptness in action and the length of time over which their physiologic action extends. In order to illustrate more fully, sulphonal may be referred to as an example. It is a preparation employed as a hypnotic. It varies, however, from the ordinary class of hypnotics in that it is extremely slow in producing sleep; consequently in order to obtain the best results it must be given three or four hours previous to the usual time for sleep.

Owing to its tardiness in action, the dose should not be repeated in less than five or six hours. In this respect it differs from the bromid as a hypnotic, a second dose of which may be given in two or three hours if the first has not produced the desired results, the bromids being more prompt in their action than sulphonal.

Strophanthus may also be mentioned in this connection. This preparation is very prompt in action; yet its effects as a heart stimulant extend over several hours; the frequency of its administration should be regulated accordingly.

Dr. D. R. Brower, who was among the first to employ this preparation in governing the heart's action in cases of exophthalmic goiter, states that that organ may be constantly influenced by the medicine if the strophanthus is repeated only once in eight hours.

#### FUGITIVE AND CUMULATIVE ACTION OF DRUGS

Brunton illustrates simply and concisely how the amount of any drug circulating in the body at a given time depends on the ratio of its absorption to its elimination. He takes two funnels, each provided with a

stopcock and places them one above the other. The upper funnel represents the stomach, and its stopcock the vessels through which absorption takes place; the lower funnel represents the body generally, and its stopcock the channels of elimination, the chief channel being the kidneys. If the stopcock of the upper funnel is closed no fluid will be received by the lower funnel, however full the first one may be. If the stopcock of the upper funnel is lightly opened and the lower one closed, the second funnel gradually becomes full. In other words, if elimination is prevented the drug gradually accumu-

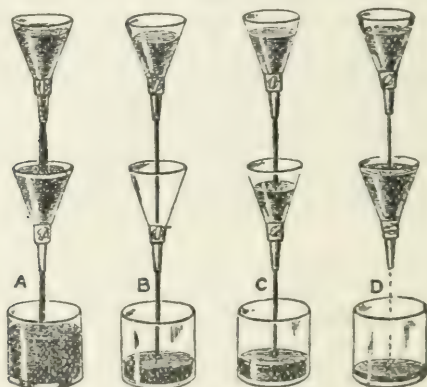


Diagram to illustrate the differences produced in the amount of a drug present in the organism by alterations in the rate of absorption and excretion. The lower funnel represents the organism. A represents the condition when a drug is rapidly introduced, as by injection into a vein. In this case the drug, *e. g.*, curare, comes to be present in large quantities in the organism, and produces its full physiologic effect. This is represented by the fulness of the lower funnel. And it does this notwithstanding the rapidity of excretion, which causes the drug to be quickly eliminated and to appear copiously in the urine, as represented by the fulness of the beaker into which the fluid flows from the lower funnel. B represents the condition when a drug is slowly absorbed and rapidly excreted, as when curare, is given by the stomach. In this case the quantity present in the blood at any one time is very minute, as represented by the empty condition of the lower funnel. C represents the condition when absorption is rather quicker than excretion, as when a dose of morphin is given by the stomach. D represents the conditions where absorption is moderate, but excretion is interfered with, leading to accumulation in the blood, as where an active drug is given by the mouth, and the kidneys are much degenerated.

lates in the system, even though absorption from the stomach takes place slowly, until a large quantity is taken into the body. He carries the illustration a little



further and states that by opening both stopcocks, elimination will be carried on at the same rate as absorption and thus accumulation does not take place. (See illustration.)

There are certain drugs which open both stopcocks rather widely and consequently are quickly taken into the system and as quickly eliminated. Amyl nitrite is a splendid example of this class; it is quickly taken up and within twenty minutes its power is spent. Nitroglycerin acts similarly but somewhat longer, an hour or one and a half hours passing before its influence upon the circulation ceases. All the ammonium salts, the bromid excepted, are likewise quick in their action. Croton oil comes in this class. From their rapidity in action, the foregoing preparations are classed as fugitive drugs.

There are other drugs which open the upper stopcock but have no such tendency to open the lower one. In this class may be mentioned digitalis, strychnin, arsenic, the iodids and belladonna. The cumulative tendency of these preparations is well known. Each drug mentioned in this last class produces certain toxic symptoms peculiar to itself as an indication that the full physiologic limit is reached and that absorption has taken place more rapidly than elimination. Consequently, drugs in this class, being cumulative in action, when prescribed continuously for any length of time, must either be given less frequently or in smaller doses if the toxic symptoms are to be avoided.

### INCOMPATIBILITIES

Prescriptions may be regarded as incompatible when they include drugs which oppose each other in their physiologic action, or when an ingredient, administered in a liquid form is insoluble in the mixture containing it, and when an ingredient is thrown out of solution by its admixture with other liquids. However, substances which are insoluble in the ordinary solvents may not be regarded as incompatible unless an even distribution can not be made through the menstruum or vehicle. A prescription is also incompatible when by combining two or more ingredients a chemical change takes place.

Incompatibilities, therefore, may arise: 1, *therapeutically*; 2, *pharmaceutically*; and 3, *chemically*.

### PHYSIOLOGIC INCOMPATIBILITY

Therapeutic incompatibilities take place when drugs are prescribed together which are opposite in their action upon certain parts of the system. To avoid such incompatibilities it behooves the practitioner to exercise care unless such actions are desired. The druggist is not bound to checkmate such combinations, because it is not unusual for such prescriptions to be written by the physician in order to accomplish a certain purpose. For example, in some conditions of the pulmonary circuit where there is marked congestion, perhaps from pneumonia or chronic endocarditis in some form, it may be desired from the nature of the condition to prescribe digitalis, but to avoid the high arterial tension produced by this drug, some preparation may be combined with it or given in alternate doses with the digitalis to relieve the arterial tension by producing an opposite action upon the coats of the vessel.

For such purposes the nitrites may be given. Consequently, a prescription containing such a combination as the foregoing would be regarded as therapeutically incompatible, and yet with a proper knowledge of their action, incomparable advantage sometimes may be accomplished by that method.

The prescribing of aloes with the iron preparations is of service in preventing the constipating effects of the iron; these drugs are frequently administered together in the form of *pilula aloes et ferri*. It is common to include extract of hyoscyamus or extract of belladonna in laxative or purgative pills to prevent them from griping by regulating peristalsis. Likewise in certain individual drugs there are found principles which are antagonistic to one another in their action; in jaborandi, opium, and rhubarb, for example, there are certain antagonistic principles which exist in such proportions that one drug acts as a corrective to the other and not as a neutralizer. Morphin when given hypodermically is guarded in its action upon the heart and respiratory centers by atropin combined with it.

## PHYSICAL OR PHARMACEUTICAL INCOMPATIBILITY

A prescription is pharmaceutically incompatible when the combined ingredients composing it do not form a clear solution; however, no chemical change takes place. For examples, oily preparations and insoluble powders are pharmaceutically incompatible with water. A combination of acids and glycyrrhiza will cause the active principle glycyrrhizin to be precipitated.

Chloral hydrate will not mix with alcoholic solutions, but separates to the top of the mixture and unless the mixture is properly shaken before administered the first few doses may contain an excess of chloral.

So in prescribing fluid extracts in aqueous solutions, their constituents, such as gums, resins, albumins, or mucilages, may be separated and thrown out of solution.

The sugar in syrups becomes crystalized if alcohol or alcoholic preparations are used in the combination.

Volatile oils should not be prescribed with aqueous solutions in greater proportion than one drop of the oil to an ounce of water in order to avoid physical incompatibility.

Saturated solutions of a drug should not be prescribed with aromatic aqueous solutions, as the volatile principle in the water will be liberated and the mixture will become cloudy. However, the taste of the bromids or iodids, in smaller quantities, is masked better when prescribed with the aromatic waters such as *aqua menthæ piperitæ* or *aqua menthæ viridis* than by the syrups.

Fluid extracts and tinctures containing resinous principles should not be prescribed with water, for the resins which are held in solution by the alcohol in the tinctures are precipitated by weakening that menstruum; under such circumstances if it is desired to use aqueous rather than alcoholic solutions, resinous principles may be suspended in an emulsion by adding mucilage of acacia, or tragacanth, which is sometimes used in its stead its preparations preserve better.

As a rule water is the best solvent for gelatinous, gummy and saccharin bodies and for a great number of inorganic salts; but all drugs containing the volatile oils and resins, gum resins, resinoids and balsams as

their active principles, are best dissolved in alcohol. It might be well to add that the solvent power of either alcohol or water decreases in direct proportion to the amount of the other added.

Glycerin makes a good solvent for bodies which are soluble in both alcohol and water, and may be in some cases preferable to alcohol. It is regarded as a superb solvent for sodium borate, boric acid, tannic acid, gallic acid, creosote, bismuth subnitrate, amylum and iodine.

As stated by Scoville, there are methods which may be employed to remedy or prevent some of the physical incompatibilities that might otherwise arise, but as these come in the rôle of the pharmacist they need be only enumerated in summing up the foregoing statements:

1. By order of mixing.
2. By keeping the alcoholic strength within certain limits.
3. By using different solvents.
4. By suspending in emulsions.
5. Remembering that the three great solvents are water, alcohol and glycerin in the order mentioned.

The following prescriptions illustrate pharmaceutical incompatibilities resulting from certain combinations:

R.

Tinct. benzoini comp.

|                                 |    |  |    |    |
|---------------------------------|----|--|----|----|
| Tinct. cardamomi comp., āā..... | 30 |  | or | 5i |
|---------------------------------|----|--|----|----|

M. Sig.: One teaspoonful after each meal.

The tinctura benzoini composita is made from a strong alcoholic menstruum while the cardamon preparation is made from a dilute alcoholic solution; consequently the resin in the first preparation would be precipitated.

R.

|                         |    |  |    |     |
|-------------------------|----|--|----|-----|
| Oleoresinæ cubebæ ..... | 8  |  | or | 5ii |
| Aquæ .....              | 60 |  |    | 5ii |

M. Sig.: One teaspoonful after each meal, in water.

The oleoresin of course is insoluble in water, so that this prescription would be incompatible. In this case suspension of the oleoresin in an emulsion by adding one or two drams of acacia to the above would correct the incompatibility.

R.

|                            |    |    |     |
|----------------------------|----|----|-----|
| Tinct. gentianæ comp. .... | 60 | or | ℥ii |
| Syrup. simplicis .....     | 60 |    | ℥ii |

M. Sig.: One teaspoonful three times a day.

As has been already stated the compound tincture of gentian, which is made from stronger alcohol, will cause the sugar to crystalize.

R.

|                                |    |    |      |
|--------------------------------|----|----|------|
| Olei juniperi .....            | 4  | or | ℥i   |
| Aq. menthæ pip. q. s. ad. .... | 90 |    | ℥iii |

M. Sig.: One teaspoonful four times a day.

In the foregoing prescription the oil in the juniper would be thrown out of solution and rise to the top of the mixture, because of the vehicle used.

R.

|                                      |    |    |      |
|--------------------------------------|----|----|------|
| Fluidextracti grindeliæ robustæ..... | 30 | or | ℥i   |
| Aq. destil. q. s. ad. ....           | 60 |    | ℥iii |

M. Sig.: One teaspoonful three times a day.

The resinous principle would be thrown out of solution on account of the water weakening the alcoholic fluid extract of grindelia.

R.

|                          |    |    |    |
|--------------------------|----|----|----|
| Potassi iodidi .....     | 30 | or | ℥i |
| Aquæ menthæ viridis..... | 30 |    | ℥i |

M. Sig.: Take ten drops after each meal and increase one drop every other day.

In this case the aqua menthæ is a saturated solution of the oil, so by saturating it with the potassium iodid salt, which is very soluble, the oil would be thrown out of solution and cause the mixture to become cloudy.

R.

|                              |     |    |     |
|------------------------------|-----|----|-----|
| Magnesii sulphatis .....     | 30  |    | ℥i  |
| Fluidextracti taraxaci ..... | 30  | or | ℥i  |
| Aquæ q. s. ad. ....          | 120 |    | ℥iv |

M. Sig.: One or two teaspoonfuls upon rising in the morning.

The soluble magnesium sulphate would in this case be precipitated by the alcoholic fluid extract in the mixture and the resins in the fluid extract would be precipitated, demonstrating the law that the more soluble a body is in water the less so in alcohol, and vice versa.

R.

|                          |   |    |          |
|--------------------------|---|----|----------|
| Chloralis hydratis ..... | 8 | or | ℥ii      |
| Camphoræ .....           | 1 | 65 | gr. xxiv |

M. Sig.: One powder at bedtime.



By triturating these preparations together they would liquefy and consequently powders could not be made.

Attention has been called to a prescription upon a druggist's file which contained the following physical incompatibles:

R.

|   |     |        |
|---|-----|--------|
| Fluidextracti leptandreae . . . . .     | 20' | 5v     |
| Fluidextracti cannabis indicæ . . . . . | 2   | 3ss    |
| Fluidextracti ergotæ . . . . .          | 15' | or 5iv |
| Syr. lactucarii . . . . .               | 15  | 3ss    |
| Aq. destil. q. s. ad . . . . .          | 90' | 3iij   |

M. Sig.: One teaspoonful four times a day.

In the above the resinous principles of the first two fluid extracts would be precipitated by the water given as the vehicle.

#### CHEMICAL INCOMPATIBILITIES

Chemical incompatibility may be apparent in three ways:

1. By precipitation or the formation of insoluble compounds.
2. By the evolution of gas.
3. In some instance by changes in the color of the mixture.

The largest class is included in the formation of insoluble compounds by precipitation. This precipitation takes place when two salts, combined, form an insoluble salt by the interchange of radicals. The most important incompatibilities are included in the following table as arranged alphabetically by M. L. Neff, for the convenience of the practitioner:

1. *Acids* or *acid salts* are incompatible with: alkalies and alkaline salts; alcohols (tinctures) and glycerin; hydrates and carbonates; glucosids; bases; relatively weak or volatile salts.

2. *Alkalies* are incompatible with: alkaloids and their salts; chloral; acids and their salts; relatively weak salts (halogens); metallic salts; calcium and magnesium salts.

3. *Alkaloids* and their salts with: alkalies; alkaline salts; halogen salts; tannic acid; phosphoric acid; boric acid and sodium borate; hydriodic acid; carbonic acid and the carbonates.

4. *Arsenic* is incompatible with: tannic acid; salts of metals, especially lead and silver; lime; magnesia.

5. *Aqueous solutions* are incompatible with: chloroform; metallic salts; essential and fixed oils; alcoholic tinctures; fluid extracts; resinous tinctures.

6. *Hydrargyri chloridum mile* (calomel) with: antipyrin; alkalies (lime water, etc.); potassium iodid; salts of iron and lead.

7. *Carbonic acid* and *carbonates* are incompatible with: iron salts; metallic salts (especially iron); salts of magnesium and calcium; acetic acid (syrupus scillæ).

8. *Aqua Calcis* is incompatible with: salts of mercury (sometimes intentional); carbonates of alkalies; morphin and quinin salts.

9. *Mucilages* are incompatible with: alcohol and nitrous ether; iron; aqua plumbi; mineral acids.

10. *Nitrous ether* (sweet spirits of niter) is incompatible with: tincture guaiac; mucilages; antipyrin; ferri sulphas; most of the carbonates.

11. *Oxidizing substances*, including the permanganates, chlorates, nitrates, etc., are incompatible with: charcoal; ammonium chlorid; tannic acid; sulphur; glycerin.

12. *Phosphoric acid* and the *phosphates* are incompatible with: alkaloids; metallic salts; salts of magnesium and calcium.

13. *Tannic acid* is incompatible with: alkaloids; metallic salts (especially iron and lead); arsenic; digitalis; albumins and gelatin.

14. *Gentian* preparations will produce a change of color in the mixture when combined with: iron salts; infusion of prunus virginianæ, infusion of cinchona comp.; silver nitrate; lead salts.

The following prescriptions will illustrate some of the chemical incompatibles of the foregoing list, as given by Seoville and Thornton:

R.

|                                 |     |        |
|---------------------------------|-----|--------|
| Hydrargyri chloridi corros..... | 065 | gr. i  |
| Potassii iodidi .....           | 15  | or ʒiv |
| Aque, q. s. ad.....             | 90  | ʒiii   |

M. Sig.: One teaspoonful after each meal in water.

In this prescription potassium iodid precipitates red mercuric iodid, which is redissolved in the excess of

potassium iodid. This prescription is sometimes intentionally ordered.

R.

|                                 |      |    |       |
|---------------------------------|------|----|-------|
| Hydrargyri chloridi corros..... | 1065 |    | gr. i |
| Potassii iodidi .....           | 8    | or | ʒvii  |
| Tinct. cinchonæ comp.....       | 90   |    | ʒiii  |

M. Sig.: One teaspoonful three times a day.

In the above the potassio-mercuric iodid precipitates the alkaloids in the cinchona, demonstrating that alkaloids should never be combined with soluble iodids or corrosive sublimate, which are powerful precipitants of the alkaloids.

R.

|                         |     |    |         |
|-------------------------|-----|----|---------|
| Hydrarg. chlorid .....  | 20  |    | gr. iii |
| Tinct. cinchonæ co..... | 210 | or | ʒvii    |
| Spts. ammon. arom.....  | 30  |    | ʒi      |

M. Sig.: One teaspoonful as directed.

This is both ambiguous and incompatible. If the first ingredient means corrosive sublimate, ammoniated mercury will be formed; if calomel, black oxid of mercury will be formed.

R.

|                          |    |    |       |
|--------------------------|----|----|-------|
| Pot. bromidi .....       | 12 |    | ʒiii  |
| Chloralis hydratis ..... | 8  |    | ʒii   |
| Spts. ammon. arom.....   | 15 | or | ʒss   |
| Syr. zingiberis .....    | 30 |    | ʒi    |
| Aquæ .....               | 45 |    | ʒiiss |

M. Sig.: Take one teaspoonful and repeat in two hours.

The chloral is decomposed by the alkaline spirits of ammonia, chloroform being formed.

R.

|                             |   |    |    |
|-----------------------------|---|----|----|
| Acidi nitro-muriatici dil.  | 1 |    |    |
| Spts. ammoniæ arom. aā..... | 4 | or | ʒi |

M. Sig.: Two drops in water every four hours.

One of the above ingredients neutralizes the other.

R.

|                          |    |    |         |
|--------------------------|----|----|---------|
| Argenti nitratis .....   | 65 |    | gr. x   |
| Cocainæ hydrochlor ..... | 75 | or | gr. xii |
| Aquæ .....               | 30 |    | ʒi      |

Silver chlorid is precipitated if dispensed as written. This may be prevented by using cocain nitrate in place of the hydrochlorate.

R.

|                  |     |       |        |
|------------------|-----|-------|--------|
| Syr. scilla      | 30  |       | 3i     |
| Syr. senega      | 15  |       | 3ss    |
| Pot. bicarb.     | 1   | 30 or | gr. xx |
| Tinct. opii      | 8   |       | 3ii    |
| Syrupi q. s. ad. | 120 |       | 3iv    |

M. Sig.: One teaspoonful four times a day, in water.

The syrupus scilla contains acetic acid, which neutralizes the ammonia in the syrupus senega and causes effervescence.

R.

|                                 |     |    |        |
|---------------------------------|-----|----|--------|
| Ammon. carb.                    | 1   | 30 | gr. xx |
| Spts. etheris nitrosi           | 30  | or | 3i     |
| Tinct. ferri chloridi           | 8   |    | 3ii    |
| Liq. ammon. acetatis, q. s. ad. | 120 |    | 3iv    |

M. Sig.: One teaspoonful every three or four hours.

The ammonium carbonate is incompatible with the ferric chlorid and spirits of nitrous ether, unless care is observed in the compounding.

R.

|                            |    |    |     |
|----------------------------|----|----|-----|
| Quininae bisulph.          | 2  | or | 3ss |
| Liq. ferri et ammon. acet. | 60 |    | 3ii |

M. Sig.: One or two teaspoonfuls three times a day.

In this combination the insoluble quinin acetate is precipitated.

### METHODS OF ADMINISTRATION

Medicines for general effect may be administered in one of the following ways:

1. Hypodermatically.
2. Endermatically.
3. As a liniment.
4. As an ointment.
5. In the form of a suppository per vaginam or rectum.
6. By the respiratory tract.
7. Per os.

### HYPODERMATIC MEDICATION

The advantages of hypodermatic medication are that certain results may be expected from the dose given, because it enters directly into the circulation and consequently does not undergo any change or decomposition which might take place if given by the stomach. Physiologic results are obtained much quicker than by any other method of medication. It is the best means of administration when the stomach is not capable of pro-

moting proper absorption. In emergency cases where rapid stimulation is imperative this method should be employed. In cases of acute pleurisy, for illustration, or an attack of gall-stones, or perhaps an acute attack of appendicitis, when medicines can not be borne by the stomach, the pain may be relieved by hypodermatic injections of morphin or codein. The possible consequences of this method, however, can not too constantly be borne in mind, namely: The dangers of the patient contracting the drug habit. A large percentage of these habitués places the blame of their downfall on the physician. That the use of the hypodermatic needle in the hands of the physician has been abused, in a great many instances, there can be no doubt. The relief of pain, the promotion of sleep, and the quieting of nervous symptoms can be obtained by other methods in the vast majority of cases if the physician would devote a little more time to the study of his patient and the accompanying symptoms.

However, when the conditions demand hypodermatic medication, a proper site should be selected for the injection, the most suitable localities being the outer aspects of the arms and thighs, the abdominal wall, between the scapulæ and in the calves of the legs. On the thigh, just anterior to the greater trochanter, it is said that there is an area two inches square over which a hypodermatic needle can not be felt on account of the comparative absence of nerve filaments.

The experience of recent years has introduced methods of treatment which sometimes demand large quantities of fluid to be introduced beneath the skin, such as the introduction of physiologic salt solutions, to take the place of large quantities of blood lost in an operation; the injection of antitoxins in treatment of the infectious diseases and the introduction of gelatin solutions to check dangerous hemorrhages. When such large quantities are to be given, locations upon the body should be chosen where the skin is loose and the large needle can be easily introduced. The fluid should be allowed to flow as slowly as possible, no difference how great or small the quantity. It is not unusual for sloughing to follow at the site of the injection when it is pushed in too hurriedly, due probably to destruction of the capillaries supplying the parts. It is not



necessary to mention the need of absolute cleanliness in preparing the skin for the injection and in rendering the needle thoroughly aseptic, also of certainty that all the air has been excluded from the syringe. Sometimes it is preferable to inject remedies immediately into the deeper tissues in order to reach a certain set of muscles or to produce some local influence upon a large nerve trunk. In cases of progressive muscular atrophy, in its earlier stages, hypodermatic, or better parenchymatous, injections of medicines are often recommended. The introduction of a sedative directly into the nerve sheath in severe attacks of sciatica is frequently resorted to.

Local applications of medicines may be employed on mucous membranes as well as on the skin; and when applied to other surfaces than the skin aqueous solutions, washes and gargles may be used.

When drugs are applied to the skin in order to produce general systemic effect it is usually in those cases in which the stomach has to be protected for certain reasons and where hypodermatic medication can not be judiciously resorted to. Difficulties may sometimes arise in calculating accurately the dose of the preparation used, on account of the uncertainty of absorption.

#### ENDERMATIC ADMINISTRATION OF DRUGS

This method consists in producing a raw surface by means of a blister, which will readily absorb the medicinal substance, such as strychnin, morphin, atropin, or quinin. This method was formerly employed, but is practically obsolete, being superseded by hypodermatic medication.

#### THE USE OF LINIMENTS

Liniments are less used than formerly. Their value probably does not consist in the properties of the ingredients they contain so much as in the vigor of the rubbing or massage of the parts to which they are applied. Their effects are purely local. In the application of liniments mistakes are often made by saturating the bandage with a liniment containing one of the volatile preparations, thus producing a large blister or possibly

sloughing. The following are the official liniments: *Linimentum ammoniæ* (volatile); *linimentum belladonnæ*; *linimentum calcis*; *linimentum camphoræ*; *linimentum chloroformi*; *linimentum saponis*; *linimentum sinapis comp.*; *linimentum terebinthinæ*. The strength of these liniments range from 10 to 20 per cent.

### OINTMENTS

Some drugs, if properly mixed with certain fatty substances as a vehicle, will be absorbed through the skin. In this manner mercury can be given and will be absorbed, if well rubbed in, without any abrasion of the skin. Quinin is often administered to children by this method. It can be mixed with lanolin, which is the best vehicle for such purposes. The selective points for application are the axillary spaces, and the inner side of the thighs and groins. Mercurial inunctions may be rubbed in between the scapulæ.

In some of the venereal clinics of Europe, patients with bared backs are daily placed astride a long plank, one in front of the other, each one is engaged in rubbing a definite amount of the mercurial ointment into the skin of the patient immediately in front of him.

Oleates are supposed to be absorbed more readily than other ointments. There are three official oleates: *oleatum hydrargyri*, *oleatum veratrinæ* and *oleatum zinci*.

### SUPPOSITORIES

Drugs are sometimes administered by the urethra, vagina or rectum, either for local or systemic effects. When introduced in the form of a suppository, oil of theobroma is most frequently used as the base, as it melts at the temperature of the body and remains as a solid at the ordinary temperature outside the body.

The following rules are generally observed in making the different forms of suppositories: Rectal suppositories should be cone-shaped and of about one gram in weight (15 grains).

Urethral suppositories should be cylindrical or pencil-shaped and weigh about one gram. Vaginal suppositories should be globular in shape and weigh about three grams. Suppositories for children should be pro-

portioned accordingly. Glycerin is sometimes used as a vehicle, being substituted for cacao-butter.

#### INHALATIONS AND ATOMIZATION

It is yet a question as to just how much of the respiratory tract is reached by these two methods. That good results can be obtained by this form of treatment in dealing with diseased conditions of the nasal mucous membrane of the pharynx, larynx, trachea and upper bronchi, there can be no doubt. Volatile preparations may be vaporized and the vapor inhaled; non-volatile substances may be dissolved in any good menstruum and, when placed in an atomizer, made to form a very fine spray. The vehicle or menstruum may be liquid petrolatum, glycerin or water. Powders may be employed by means of insufflation.

#### ADMINISTRATION OF MEDICINE BY THE MOUTH

Medicines may be given by the mouth in the form of a capsule, powder, cachet or liquid. When capsules are given the amount of the combined ingredients should be observed so that the capsule will not be too large for the patient to swallow. But if such should be the case the druggist may be instructed to make double the number of capsules and the patient directed to take two at each dose. Capsules can be prescribed for certain patients who object to the taste of medicine, especially when it is given in sufficiently small doses. Creosote may be taken in capsules rather than in an unpalatable mixture. There are, however, instances where capsules have traversed the entire gastrointestinal tract undissolved; under such circumstances a powder or liquid may be prescribed.

Powders are preferable to capsules when large doses are to be given and when the preparation is palatable. Sulphonal serves as an illustration, since it is given in too large doses for a capsule and acts more promptly when dissolved in hot water. There are certain drugs which should never be prescribed in powder form, because of their tendency to deliquescence. Salol and sodium salicylate belong to this class. Some combinations in the form of a powder liquefy, as is demonstrated by combining chloral and camphor.

The liquid preparation can be prescribed suitably in the majority of cases if the practitioner observes care in selecting a proper vehicle. As previously mentioned, medicines which tend to irritate the stomach should, if possible, be taken immediately after eating and well diluted in water. Arsenic when given in the form of Fowler's solution to children afflicted with chorea, should always be well diluted. The nurse should be instructed to put the required number of drops in at least half a glass or a glass of water, and if the child can not drink it all at one time, set the glass aside for a few minutes and then let him drink the remaining portion. In this way the stomach can be made to tolerate much larger doses than when given in too concentrated form. Iodids should likewise be well diluted before being introduced into the stomach if large doses are in the end desired.

In acute cases where changes in the condition of the patient may arise quickly, small amounts should be prescribed at a time; if capsules are given, the physician should not write, as a rule, for more than fifteen, or two ounces of liquids, unless more than one teaspoonful is given at a dose. The patients feel that they are being imposed on when they are required to purchase new medicines if one or two ounces of the previous prescription remains unused. On the other hand, in chronic cases it is preferable to prescribe much larger quantities at a time.

In administering certain medicines by the mouth it should be remembered that the mucous membranes of the stomach and intestines may not be in a condition to carry on proper absorption. Literature records several cases where some opiate preparation has been introduced into the stomach to relieve severe localized pain or headache, and resulted in acute opium poisoning; this was not because the dose was too large, but the gastrointestinal tract was not in condition to absorb the first doses given; consequently by this delayed action, several doses were taken up at the same time with fatal result.

A word also must be said as to caution in prescribing for pregnant women. There are some drugs which produce untoward results on the pregnant uterus by exciting abnormal contractions and perhaps causing abortion. Ergot and quinin are especially included in this class;

they act on the unstriated muscle of that organ and set up a tendency to the expulsion of its contents.

There is danger in placing in a patient's hands a prescription for certain drugs, such as morphin, cocain, chloral, etc. If the physician finds it necessary to prescribe these drugs to susceptible individuals he should not neglect in some way to indicate to the druggist that they should not be refilled without his knowledge and consent. Otherwise he has not done his duty toward that patient. Another point is that such patients are prone to talk to their neighbors and advise them to try their medicines for relieving symptoms apparently similar to their own, while in fact the cause may be far different. A writer states one such instance where a female patient was given pills of hydrargyri protoiodidum to cure a headache of specific origin; the results were so miraculous and satisfactory that in a short time several of her lady friends were taking the same little yellow pills on her recommendation.

### WEIGHTS AND MEASURES

#### Relative Value of Domestic Measures

|              |   |                          |
|--------------|---|--------------------------|
| Teaspoon     | = | 1 fluidram               |
| Dessertspoon | = | 2 fluidrams              |
| Tablespoon   | = | $\frac{1}{2}$ fluidounce |
| Wineglass    | = | 2 fluidounces            |
| Teacup       | = | 4 fluidounces            |
| Tumbler      | = | 8 fluidounces            |

These quantities are only approximate. Prescribing medicine by the spoon or glass is unscientific and unsafe. A graduated measure should be used.

#### Apothecaries' Weight

|           |                     |   |                          |
|-----------|---------------------|---|--------------------------|
| 1 scruple | ( $\mathfrak{D}$ )  | = | 20 grains (gr)           |
| 1 dram    | ( $\mathfrak{z}$ )  | = | 3 scruples = 60 grains   |
| 1 ounce   | ( $\mathfrak{z}$ )  | = | 8 drams = 480 grains     |
| 1 pound   | ( $\mathfrak{lb}$ ) | = | 12 ounces = 5,760 grains |

#### Apothecaries' Fluid Measure

|              |                                |   |                               |
|--------------|--------------------------------|---|-------------------------------|
| 1 fluidram   | ( $\mathfrak{f}\mathfrak{z}$ ) | = | 60 minims (m)                 |
| 1 fluidounce | ( $\mathfrak{f}\mathfrak{z}$ ) | = | 8 fluidrams = 480 minims      |
| 1 pint       | ( $\mathcal{O}$ )              | = | 16 fluidounces = 7,680 minims |
| 1 gallon     | ( $\mathcal{C}$ )              | = | 8 pints = 61,440 minims       |



### Thermometric Equivalents

To convert degrees Centigrade into degrees Fahrenheit, or vice versa, use one of the following formulas:

$$\text{Let } \begin{cases} F = \text{no. of degrees Fahrenheit.} \\ C = \text{no. of degrees Centigrade.} \end{cases}$$

$$\text{Then: } F = \frac{9}{5} C + 32; \quad C = \frac{5}{9} (F - 32)$$

| C.    | F.      | C.    | F.      | C. | F.     |
|-------|---------|-------|---------|----|--------|
| 100   | = 212   | 38.33 | = 101   | 22 | = 71.6 |
| 90    | = 194   | 38    | = 100.4 | 21 | = 69.8 |
| 80    | = 176   | 37.77 | = 100   | 20 | = 68   |
| 70    | = 158   | 37.50 | = 99.5  | 19 | = 66.2 |
| 60    | = 140   | 37.22 | = 99    | 18 | = 64.4 |
| 55    | = 131   | 37    | = 98.6  | 17 | = 62.6 |
| 50    | = 122   | 36.66 | = 98    | 16 | = 60.8 |
| 49    | = 120.2 | 36.11 | = 97    | 15 | = 59   |
| 48    | = 118.4 | 36    | = 96.8  | 14 | = 57.2 |
| 47    | = 116.6 | 35.55 | = 96    | 13 | = 55.4 |
| 46    | = 114.8 | 35    | = 95    | 12 | = 53.6 |
| 45    | = 113   | 34    | = 93.2  | 11 | = 51.8 |
| 44    | = 111.2 | 33    | = 91.4  | 10 | = 50   |
| 43    | = 109.4 | 32    | = 89.6  | 9  | = 48.2 |
| 42    | = 107.6 | 31    | = 87.8  | 8  | = 46.4 |
| 41.66 | = 107   | 30    | = 86    | 7  | = 44.6 |
| 41.11 | = 106   | 29    | = 84.2  | 6  | = 42.8 |
| 41    | = 105.8 | 28    | = 82.4  | 5  | = 41   |
| 40.55 | = 105   | 27    | = 80.6  | 4  | = 39.2 |
| 40    | = 104   | 26    | = 78.8  | 3  | = 37.4 |
| 39.44 | = 103   | 25    | = 77    | 2  | = 35.6 |
| 39    | = 102.2 | 24    | = 75.2  | 1  | = 33.8 |
| 38.88 | = 102   | 23    | = 73.4  | 0  | = 32   |

### Relative Values of Apothecaries' and Metric Weights

| Grains. | Grams.    | Grains. | Grams.  | Drams.  | Grams.    |
|---------|-----------|---------|---------|---------|-----------|
| 1-100   | = 0.00065 | 8       | = 0.518 | 1       | = 3.89    |
| 1-60    | = 0.00107 | 9       | = 0.583 | 2       | = 7.78    |
| 1-50    | = 0.00130 | 10      | = 0.648 | 3       | = 11.66   |
| 1-40    | = 0.00162 | 11      | = 0.713 | 4       | = 15.55   |
| 1-30    | = 0.00216 | 12      | = 0.778 | 5       | = 19.44   |
| 1-25    | = 0.00259 | 13      | = 0.842 | 6       | = 23.33   |
| 1-20    | = 0.00324 | 14      | = 0.907 | 7       | = 27.22   |
| 1-16    | = 0.00405 | 15      | = 0.972 | Ounces. |           |
| 1-12    | = 0.00538 | 15½     | = 1.000 | 1       | = 31.10   |
| 1-10    | = 0.00648 | 17      | = 1.102 | 2       | = 62.20   |
| 1-5     | = 0.01296 | 19      | = 1.235 | 3       | = 93.30   |
| 1-4     | = 0.01620 | 21      | = 1.360 | 4       | = 124.40  |
| 1-3     | = 0.02160 | 23      | = 1.490 | 5       | = 155.50  |
| 1-2     | = 0.03240 | 25      | = 1.62  | 6       | = 186.60  |
| 1       | = 0.065   | 27      | = 1.75  | 7       | = 217.70  |
| 2       | = 0.130   | 29      | = 1.88  | 8       | = 248.80  |
| 3       | = 0.194   | 30      | = 1.95  | 9       | = 280.00  |
| 4       | = 0.259   | 35      | = 2.27  | 10      | = 311.00  |
| 5       | = 0.324   | 40      | = 2.59  | 11      | = 342.15  |
| 6       | = 0.389   | 50      | = 3.24  | 12      | = 373.25  |
| 7       | = 0.454   |         |         | 14      | = 435.45  |
|         |           |         |         | 16      | = 497.65  |
|         |           |         |         | 24      | = 746.45  |
|         |           |         |         | 48      | = 1492.90 |
|         |           |         |         | 100     | = 3110.00 |

## Relative Values of Apothecaries' and Metric Fluid Measures

| m.   | c.c. | fl. 3. | c.c.   | fl. 3 | c.c.    |
|------|------|--------|--------|-------|---------|
| 1 =  | .06  | 1 =    | 3.70   | 17 =  | 503.00  |
| 2 =  | .12  | 1¼ =   | 4.60   | 18 =  | 532.00  |
| 3 =  | .18  | 1½ =   | 5.50   | 19 =  | 562.00  |
| 4 =  | .25  | 1¾ =   | 6.50   | 20 =  | 591.50  |
| 5 =  | .30  | 2 =    | 7.40   | 21 =  | 621.00  |
| 6 =  | .37  | 3 =    | 11.00  | 22 =  | 651.00  |
| 7 =  | .42  | 4 =    | 14.80  | 23 =  | 680.00  |
| 8 =  | .50  | 5 =    | 18.50  | 24 =  | 710.00  |
| 9 =  | .55  | 6 =    | 22.20  | 25 =  | 740.00  |
| 10 = | .60  | 7 =    | 25.90  | 26 =  | 769.00  |
| 11 = | .68  | fl. 3  | c.c.   | 27 =  | 798.50  |
| 12 = | .74  | 1 =    | 30.00  | 28 =  | 828.00  |
| 13 = | .80  | 2 =    | 59.15  | 29 =  | 857.50  |
| 14 = | .85  | 3 =    | 89.00  | 30 =  | 887.00  |
| 15 = | .90  | 4 =    | 118.30 | 31 =  | 916.75  |
| 16 = | 1.00 | 5 =    | 147.90 | 32 =  | 946.35  |
| 17 = | 1.05 | 6 =    | 177.50 | 48 =  | 1419.50 |
| 18 = | 1.11 | 7 =    | 207.00 | 56 =  | 1656.00 |
| 19 = | 1.17 | 8 =    | 236.50 | 64 =  | 1892.75 |
| 20 = | 1.25 | 9 =    | 266.00 | 72 =  | 2129.00 |
| 25 = | 1.55 | 10 =   | 295.70 | 80 =  | 2366.00 |
| 30 = | 1.85 | 11 =   | 325.30 | 96 =  | 2839.00 |
| 35 = | 2.16 | 12 =   | 355.00 | 112 = | 3312.25 |
| 40 = | 2.46 | 13 =   | 385.00 | 128 = | 3785.40 |
| 45 = | 2.77 | 14 =   | 414.00 |       |         |
| 50 = | 3.08 | 15 =   | 444.00 |       |         |
| 55 = | 3.39 | 16 =   | 473.20 |       |         |

## THE METRIC SYSTEM

In an article that appeared in *THE JOURNAL* of the American Medical Association, May 11 and 18, 1907, on "The Metric System and How to Use It," Dr. W. A. Jolley of Boulder, Colo., wrote in part as follows:

We can change to the metric system without danger or friction, but it must be a genuine conversion. We must drop the old and take up the new without any modifications. Do not transpose doses from the one system to the other, but use the metric alone and insist that the druggists do the same. The metric weights and measures are as easily manipulated as the apothecaries'; the difficulty is in computing the proper dosage. The same method should be applied in studying this new system as in acquiring a foreign language. We learn the name of a certain object in the new tongue, use it repeatedly, and in a short time we can associate the two without mental effort. In the metric system we should ascertain the value of a gram or cubic centimeter, then work with it until we are familiar with it. This will be our basis for all computations.

There is no short cut to knowledge of the metric system. One cannot drop at once that which has been used constantly for years; but when once this has been done and the metric system taken up in its place, a step forward has been made in practical medicine. Remember the fundamental principle: *Do not transpose doses.*

In dispensing many physicians use the familiar old standard of household measurement—a teaspoon. A moment's work with a graduate will show that with this standard we have long erred, for the contents are far above the dram, which we have always used as its equivalent. This error has been introduced into the metric system, for most tables give the equivalent of a teaspoonful as four (4) cubic centimeters. Actual tests will show that the usual teaspoon will hold five (5) cubic centimeters. The larger quantities used in writing prescriptions are multiples of 5, e. g.—50, 100, 250, 500, 1,000.

1. *Liquid Measurements.*—Table 1 is intended to facilitate the acquirement of the metric system for practical prescribing, but it is not accurate enough for scientific work.

TABLE I

|                     |                          |
|---------------------|--------------------------|
| 15 minims .....     | 1 cubic centimeter.      |
| 1 dram .....        | 4 cubic centimeters.     |
| 1 teaspoonful ..... | 5 cubic centimeters.     |
| 1 ounce .....       | 30 cubic centimeters.    |
| 1 pint .....        | 500 cubic centimeters.   |
| 1 quart .....       | 1,000 cubic centimeters. |

Prescriptions should be planned so that numbers to which we are accustomed in our monetary system may be used—that is, decimal fractions and the short cuts used in financial calculations.

The majority of acute conditions for which physicians are called to prescribe subside in two or three days and do not require more than about twenty doses of any remedy; and when it is remembered that a teaspoon holds about 5 c.c. it will be seen that 100 c.c. is all that need be prescribed. If the dose of the drug is less than 5 c.c. multiply the selected amount by twenty (20) and add some vehicle to bring the total amount to 100 c.c.

This is a convenient amount to prescribe when the medicine is to be given three times a day for a week. For one month 500 c.c. is approximately the quantity to prescribe if the medicine is to be taken at meal times, as is usual in continued treatment.

When preparing antiseptic solutions 1,000 c.c. or 1 liter is convenient to use.

The following prescriptions will explain this more fully. Aconite is generally used in most fever mixtures, taken 0.2 c.c. at a dose. *Liquor potassii citratis* may be used as a vehicle. It requires practically no mental effort to write:

R. *Tincturæ aconiti* (.2x20)..... 4|  
*Liquoris potassii citratis* q. s. ad..... 100|  
M. Sig.: A teaspoonful every 4 hours.

The following prescription containing *nux vomica* may be used when a tonic is to be given, for a month:

R. *Tincturæ nucis vomicæ* (.5x100)..... 50|  
*Tincturæ gentianæ comp.* q. s. ad..... 500|  
Sig.: A teaspoonful before meals.

The metric system has no equal when preparing solutions of a definite percentage. For example, if there were no bichlorid of mercury tablets it would take the ordinary man several minutes to decide on the proper amount to be used in a 2 to 1,000 solution, but a prescription is easily written in the metric system:

R. Hydrargyri chloridi corrosivi..... 2  
Aqua q. s. ad..... 1,000

Sig.: Poison; Use for wash.

2. *Weights*.—It is more difficult to handle weights, for the quantities are so small and the specific gravity varies so greatly that one cannot compare the different amounts as with liquids. The term "one grain" conveys to the mind an idea of a definite quantity that has been used as a standard from habit, not for convenience. In the case of alkaloids the grain is divided very minutely and the term is dropped altogether if the amount is a dram or more.

The metric system offers a number which does not have these objections. I will take 0.05 gram, or 50 mg., as a basis for smaller calculations, because it is approximately a grain and can be used even if large quantities are to be weighed.

This has the same advantage that 5 c.c. has in the liquid measurements, but to secure the advantages of the decimal system the prescription should be written for 10, 20 or 50 doses if powders, pills, capsules, tablets, suppositories, or any solids are to be given. For example:

R. Pulveris ipecacuanhæ et opii (.5x10)..... 5|  
M. Ft. pulveres No. x.

A great obstacle lies in the fact that tablets are not made in the metric system, so that physicians who dispense their own medicines think that they can use only the apothecaries' weights, but this is a mistaken idea. Tablets can be selected, the dosage of which can be stated approximately in the metric system, and so label them until the tablets are made in the metric weights, as they will be eventually. Table 2 gives an idea of the approximate equivalents, not accurate enough for scientific work, but close enough for practical dispensing.

TABLE II

|             |   |                         |
|-------------|---|-------------------------|
| 1/500 grain | = | .000125.                |
| 1/250 grain | = | .00025.                 |
| 1/120 grain | = | .0005                   |
| 1/60 grain  | = | .001 or 1 milligram.    |
| 1/30 grain  | = | .002 or 2 milligrams.   |
| 1/10 grain  | = | .005 or 5 milligrams.   |
| 1/6 grain   | = | .01 or 10 milligrams.   |
| 1/3 grain   | = | .02 or 20 milligrams.   |
| 1/2 grain   | = | .03 or 30 milligrams.   |
| 1 grain     | = | .05 or 50 milligrams.   |
| 2 grains    | = | .125 or 125 milligrams. |
| 5 grains    | = | .3.                     |
| 15 grains   | = | 1 gram.                 |
| 1 dram      | = | 4 grams.                |
| 1 ounce     | = | 30 grams.               |

As a practical illustration I select a few of the above equivalents which can be used when ordering tablets:

|                       |       |                               |
|-----------------------|-------|-------------------------------|
| Aconitin .....        | 1/500 | grain can be labeled .000125. |
| Strychnin sulphate... | 1/60  | grain can be labeled .001.    |
| Strychnin sulphate... | 1/30  | grain can be labeled .002.    |
| Calomel .....         | 1/6   | grain can be labeled .01.     |
| Calomel .....         | 1     | grain can be labeled .05.     |

That sacrifices extreme accuracy for mathematical convenience, as is the practice in writing prescriptions in the apothecaries' system.

It is easy to use the metric weights in ointments and suppositories. For example:

|    |                             |    |  |   |
|----|-----------------------------|----|--|---|
| R. | Ichthyol .....              | 2  |  | 5 |
|    | Olei citronellæ .....       | 50 |  |   |
|    | Adipis lanæ hydrosi .....   |    |  |   |
| M. | et ft. unguentum.           |    |  |   |
| R. | Pulveris opii .....         | 2  |  |   |
|    | Olei theobromatis .....     | 20 |  |   |
| M. | et ft. suppositoria No. xx. |    |  |   |

3. *Solids and Liquids*.—Manufacturers and wholesale druggists use the avoirdupois ounce (437.5 grains) when selling drugs. A druggist may take an unbroken package without remembering this fact and fill a prescription with it, in which case the patient will receive less than intended. This cannot occur in the metric system. The following prescription illustrates the ease with which solids can be accurately combined with liquids:

|       |                                      |     |  |  |
|-------|--------------------------------------|-----|--|--|
| R.    | Potassii iodidi (.25x100) .....      | 25  |  |  |
|       | Syrupi sarsaparillæ comp. q. s. .... | 500 |  |  |
| Sig.: | One teaspoonful three times daily.   |     |  |  |

The accuracy of the metric system is especially evident in handling alkaloids when percentage solutions are to be made, as is often the case with cocain. For example:

|    |                                |                                    |  |   |
|----|--------------------------------|------------------------------------|--|---|
| R. | Cocainæ hydrochloridi .....    | 10                                 |  | 4 |
|    | Aquæ destillatæ q. s. ad. .... |                                    |  |   |
| M. | Sig.:                          | Four per cent. solution of cocain. |  |   |

4. *Practice*.—Having thus obtained a theoretical knowledge of the principles involved, a practical knowledge should be acquired by actual work with graduates, bottles and scales, using common drugs until one is familiar with the different terms and the quantities they represent. The next step can be combined with a study of the changes in the new Pharmacopeia. A physician might take a file of prescriptions and ascertain the principal drug he is using. He can consult the



new Pharmacopeia and study the preparations made from each, the percentage of active principle, dose and pharmaceutical indication. This information could be written on a card to be studied at leisure, as follows:

**Nux vomica :**

|   |      |
|---|------|
| Nux vomica contains 1.25 p. c. of strychnin, dose.....        | 05   |
| Extract nux vomica contains 5 p. c. of strychnin, dose..      | 0125 |
| Fluidext. nux vomica contains 1 p. c. of strychnin, dose.     | 05   |
| Tinct. nux vomica contains 1 p. c. of strychnin, dose...      | 5    |
| Iron and stryech. citrate contains 1 p. c. of strychnin, dose | 125  |
| Ellxir iron, quinin and stryech. contains .275 in 1,000..     | 4    |
| Glycerite of iron, quinin and stryech. contains .8 in 1,000   | 1    |
| Syrup of iron, quinin and stryech. contains .2 in 1,000..     | 4    |
| Syrup iron hypophosphite comp. contains .115 in 1,000..       | 8    |

Such drugs as opium, belladonna, digitalis, cœca, cinchona, aconite, ipecac, iron, arsenic and a few others could be handled as described. Drugs are being standardized and the strength of the active principles expressed in percentages. Tinctures are made to contain a definite percentage of the crude drug. Test solutions and all scientific work is based on the metric system. Continued use will bring out the advantages of this system which are not apparent at first.

*To Determine Amount of Active Principle.*—The amount of the active principle in each prescription can easily be calculated when written in the metric system as follows: In the first prescription given in this article 10 c.c. of the tincture of aconite was prescribed; 100 c.c. contains .045 gm. of aconitin, 10 c.c. will have .0045, and each dose will contain .0002 aconitin.

In the second prescription it must be remembered that as 100 c.c. of the tincture of nux vomica contains .1 gm. strychnin, then 50 c.c. contains .05, and each dose will represent .0005 strychnin.

In the fourth prescription the amount of opium is 1/10 of the entire quantity=.5, the quantity of morphin is 12 per cent. of .5=.06. In each powder, .006.

## DOSAGE FOR CHILDREN

One advantage of the metric system is the facility with which dosage for children can be computed.

Consider the age of an adult as 20 and use that number for a denominator and the child's age for the numerator, as follows: Estimate the dosage for an adult for one dose in that particular condition. This then will be the total required in a mixture containing 100 c.c. for a child one year old if a teaspoonful is given as each dose; a child two years old will require twice that amount in the 100 c.c., and so on up to the adult.

## Doses for Children

*Young's Rule:* Divide the child's age by the child's age plus twelve. Thus, for a child of four:

$$\frac{4}{4 + 12} = \frac{4}{16} = \frac{1}{4}$$

therefore  $\frac{1}{4}$  of the adult dose is the correct amount.

NOTE.—This rule is by no means absolute. When giving narcotics to children not more than *one-half* the amount determined by Young's rule should be administered; with purgatives, on the other hand, larger doses than those indicated by the rule may be given.

Some one has recommended the following plan for prescribing quickly and accurately for infants under one year of age: In a 3-ounce mixture, when a teaspoonful is given at a dose, direct the druggist to put into the mixture as much of each ingredient as may be given to an adult at one dose. The following prescription will serve to elucidate the rule:

R.

|                                  |       |       |
|----------------------------------|-------|-------|
| Tinct. nucis vom.....            | 65    | m.x   |
| Sodii bicarb. ....               | 65 or | gr. x |
| Aq. aurantii .....               | 65    | m. x  |
| Tinct. card. comp. q. s. ad..... | 90    | ʒiii  |

M. Sig.: One teaspoonful three or four times a day, in water.

It will be seen by the above illustration that the amount of each preparation is approximately a single dose for an adult. In short, the infant receives one-twenty-fourth the adult dose, which is a safe calculation. In children between the ages of 2 and 4 years the size may be increased so that the amount of each ingredient in a 3-ounce mixture may equal two or three times the adult dose.

Cowling's method is somewhat similar to the above. His rule is to divide the age next birthday by 24; consequently for a child of 6 years the following formula would apply:  $6 \div 24 = \frac{1}{4}$ , or one-fourth the adult dose. The fault with this rule is that under ordinary circumstances the dose would be too small. Some physicians find 20 a convenient and safe denominator. Occasionally a rule is followed, based on the weight of the child,

which is taken as the numerator of a fraction whose denominator is 140; this is supposed to be the average weight of an adult.

In prescribing for children as well as old people, exceptions arise in using certain drugs, as has been previously mentioned. The skillful physician is he who knows not only general rules but also just when to make exceptions in view of the individual circumstances presented before him. To learn this requires years of study and observation.

## POISONS AND ANTIDOTES

*In General:* Empty the stomach with emetic or stomach tube, except when corrosives have been taken. Good emetics are: 1. Apomorphin 0.006 gm. (1/10 grain) hypodermically. 2. Mustard, a tablespoonful in a glass of warm water. 3. Ipecac, a tablespoonful of the wine or syrup, or 2.6 gm. (40 grains) of the powder, following the dose with a glass of warm water. 4. Common salt, a tablespoonful in one-half glass of lukewarm water. 5. Zinc sulphate, 2 gm. (30 grains) in warm water. For metallic salts in general: Alkaline carbonates, albumin. For alkaloids in general: Tannic acid.

*Acetanilid, antifebrin, antipyrin, exalgin and phenacetin:* Place the patient in dorsal position, loosen clothes, supply fresh air or oxygen, external heat; strychnin; aromatic spirits of ammonia; coffee (caffein); belladonna to maintain blood pressure.

*Acids, Mineral:* Soap; chalk; magnesia; solution of sodium bicarbonate: emollient drinks; fixed oils. For pain, morphin hypodermically.

*Aconite:* Place patient in prone position: belladonna; mustard over heart; aromatic spirits of ammonia; strychnin; heat externally and artificial respiration.

*Alcohol (Acute):* Digitalis hypodermically; strychnin: heat to body; ice to head; strong black coffee.

*Antimony compounds:* Tannic acid; coffee: copious amount of very strong tea; white of eggs, milk: digitalis hypodermically; heat externally; brandy; strychnin.

*Alkalies:* Vinegar, diluted acetic acid; citric acid and lemon juice; morphin for pain.

*Arsenic:* Ferri oxidum hydratum cum magnesii oxido (official arsenic antidote); dialyzed iron; mucilaginous drinks; white of eggs; brandy; heat externally; morphin for pain.

*Belladonna (atropin):* Liquor iodi compositus, 0.3 c.c. (m. vi). Tannic acid; coffee or tea by mouth or rectum; pilocarpin; physostigmin: heat to feet; brandy or whisky: ammonia to nostrils; artificial respiration.

*Bichlorid of Mercury:* See Corrosive Sublimate.

*Carbolic Acid or Cresote:* See Phenol, below.

*Chloral:* Strychnin, ether, digitalis, ammonia to nostrils, cold to head, artificial respiration.

*Chlorin or Chlorinated Lime:* White of eggs, olive oil; milk; flour and water; lime water; ammonia to nostrils; brandy.

*Chloroform:* If inhaled: ammonia, atropin; strychnin, adrenalin intravenously; lower head and pull tongue forward;

external heat: artificial respiration: alternate hot and cold douche to face. If Swallowed: water abundantly, strong hot coffee, in other respects proceed the same as if inhaled: massage precordium.

*Cocain and Eucaïn:* Tannin; coffee; morphin; amyl nitrite; strychnin; brandy; artificial respiration.

*Colchicum:* Tannic acid and oils; atropin and stimulants for collapse.

*Conium:* External heat; strychnin.

*Copper:* Ferrocyanid of potassium; white of egg; sweet oil followed by emetic; counter irritation over abdomen.

*Corrosive Sublimate:* Large amounts of white of egg followed by stomach tube; external heat and stimulants.

*Digitalis:* Tannic acid; external heat to abdomen; maintain horizontal position; strychnin.

*Ether:* Artificial respiration; lower head; ammonia; atropin; digitalis and strychnin hypodermically; hot applications; pull tongue forward.

*Gelsemium:* External heat; digitalis; atropin, ammonia.

*Hydrocyanic Acid:* Ammonia, atropin.

*Iodin:* Emulsion of starch, flour, or bread; hot applications and alcohol, ammonia, atropin, digitalis or strychnin hypodermically.

*Iodoform:* Sodium bicarbonate, diuretics and hot blankets.

*Lead:* Alum, Epsom salts, emetics or stomach tube; hot applications.

*Nitrate of Silver:* Common salt; milk; oils: maintain body heat.

*Nux Vomica and its alkaloids:* Avoid emetics and stomach tube as a rule; amyl nitrite by inhalation; liquor iodi compositus or potassium permanganate: tannic acid, followed by physiologic antidotes (potassium bromid, chloral). If convulsions prevent swallowing, carefully chloroform the patient and give antidotes by rectum.

*Opium:* Tannic acid, coffee, electricity, atropin and strychnin hypodermically; keep awake; ammonia and external heat: repeated washing of stomach with 1 per cent. solution of potassium permanganate; artificial respiration.

*Phenol (carbolic acid) or Creosote:* Any soluble sulphate such as magnesium sulphate; brandy; alcohol; flaxseed or elm tea; white of eggs; milk; soap solution; strychnin.

*Phosphorus:* Potassium permanganate (1 per cent.), peroxid of hydrogen; avoid fats and oils; persistent purgation.

*Physostigma:* Atropin; external heat: cardiac and respiratory stimulants.

*Veratrum Viride:* Prone position, head low: external heat; atropin, strychnin, and cardiac stimulants.



## SYNONYMS

- AQUA FORTIS, Acidum nitricum, U. S. P.  
 AQUA REGIA, Acidum nitrohydrochloricum, U. S. P.  
 BASHAM'S MIXTURE, Liquor ferri et ammonii acetatis, U. S. P.  
 BASILICON OINTMENT, Ceratum resinæ, U. S. P.  
 BATEMAN'S DROPS, Tinctura pectoralis, N. F.  
 BESTUCHEFF'S TINCTURE, Tinctura ferri chloridi ætherea, N. F.  
 BLACK DRAUGHT, Infusum sennæ compositum, U. S. P.  
 BLACK DROP, Acetum opii, U. S. P.  
 BLACK WASH, Lotio nigra, N. F.  
 BLANCARD'S PILL, Pilula ferri iodidi, U. S. P.  
 BLAUD'S PILL, Pilula ferri carbonatis, U. S. P.  
 BLEACHING POWDER, Calx chlorinata, U. S. P.  
 BLUE MASS, Massa hydrargyri, U. S. P.  
 BLUE OINTMENT, Unguentum hydrargyri dilutum, U. S. P.  
 BLUE VITRIOL, Cupri Sulphas, U. S. P.  
 BOULTON'S SOLUTION, Liquor iodi carbolatus, N. F.  
 BROWN MIXTURE, Mistura glycyrrhizæ composita, U. S. P.  
 CARRON OIL, Linimentum calcis, U. S. P.  
 CLEMEN'S SOLUTION, Liquor potassi arsenatis et bromidi, N. F.  
 CLUTTERBUCK'S ELATERIUM, Elaterinum, U. S. P.  
 COMPOSITION POWDER, Pulvis myricæ compositus, N. F.  
 COXE'S HIVE SYRUP, Syrupus scillæ compositus, U. S. P.  
 DALBY'S CARMINATIVE, Mistura carminativa, N. F.  
 DOBELL'S SOLUTION, Liquor sodii boratis compositus, N. F.  
 DONOVAN'S SOLUTION, Liquor arseni et hydrargyri iodidi, U. S. P.  
 DOVER'S POWDER, Pulvis ipecacuanhæ et opii, U. S. P.  
 EPSOM SALTS, Magnesii sulphas, U. S. P.  
 FENNER'S GUAIAK MIXTURE, Tinctura antacrida, N. F.  
 FOWLER'S SOLUTION, Liquor potassi arsenitis, U. S. P.  
 FRENCH MIXTURE, same as Boulton's Solution, which see.  
 FRIAR'S BALSAM, Balsamum traumaticum, N. F.  
 GADBURY'S MIXTURE, Mistura splenetica, N. F.  
 GLAUBER SALT, Sodii sulphas, U. S. P.  
 GODFREY'S CORDIAL, Mistura sassafras et opii, N. F.  
 GOULARD'S CERATE, Ceratum plumbi subacetatis, U. S. P.  
 GOULARD'S EXTRACT, Liquor plumbi subacetatis, U. S. P.  
 GRAY POWDER, Hydrargyrum cum creta, U. S. P.  
 GREGORY'S POWDER, Pulvis rhei compositus, U. S. P.  
 GRIFFITH'S MIXTURE, Mistura ferri composita, U. S. P.  
 GROSS' PILL, Pilulæ antineuralgicæ, N. F.  
 HALLER'S ACID MIXTURE, Mistura sulphurica acida, N. F.  
 HOFFMANN'S ANODYNE, Spiritus ætheris compositus, U. S. P.  
 HOPE'S MIXTURE, Mistura camphoræ acida, N. F.  
 HUXHAM'S TINCTURE, Tinctura cinchonæ composita, U. S. P.  
 JACKSON'S PECTORAL SYRUP, Syrupus pectoralis, N. F.  
 JAVELLE WATER, Liquor potassæ chlorinatæ, N. F.  
 LABARRAQUE'S SOLUTION, Liquor sodæ chlorinatæ, U. S. P.  
 LAMOTTE'S DROPS, Tinctura ferri chloridi ætherea, N. F.  
 LONDON PASTE, Soda cum calce, N. F.  
 LUGOL'S SOLUTION, Liquor iodi compositus, U. S. P.  
 LUNAR CAUSTIC, Argenti nitras fusus, U. S. P.  
 MAGENDIE'S SOLUTION, Liquor morphinæ hypodermicus, N. F.  
 MONSELL'S SOLUTION, Liquor ferri subsulphatis, U. S. P.  
 PARRISH'S CAMPHOR MIXTURE, Mistura camphoræ aromatica, N. F.  
 PEARSON'S SOLUTION, Liquor sodii arsenatis, Pearson, N. F.  
 QUEVENNE'S IRON, Ferrum reductum, U. S. P.  
 SMITH'S SOLUTION OF BROMIN, Liquor bromi, N. F.  
 ST. GERMAIN TEA, Species laxantes, N. F.  
 STOKES' MIXTURE, Mistura pectoralis, N. F.  
 SUGAR OF LEAD, Plumbi acetatis, U. S. P.  
 THOMPSON'S SOLUTION OF PHOSPHORUS, Liquor phosphori, N. F.  
 TURLINGTON'S BALSAM, Tinctura benzoini composita, U. S. P.  
 TURNER'S CERATE, Unguentum calaminæ, N. F.

VALLET'S MASS, *Massa ferri carbonatis*, U. S. P.  
 VLEMINCK'S SOLUTION, *Liquor calcis sulphurata*, N. F.  
 WARBURG'S PILL, *Pilula antiperiodica*, N. F.  
 WARBURG'S TINCTURE, *Tinctura antiperiodica*, N. F.  
 WARREN'S STYPTIC, *Lotio adstringens*, N. F.  
 WILKINSON'S OINTMENT, *Unguentum sulphuris compositum*, N. F.  
 YELLOW WASH, *Lotio flava*, N. F.

## NEW AND NONOFFICIAL REMEDIES

The following have been approved by the Council on Pharmacy and Chemistry for "New and Nonofficial Remedies" (including Appendix), up to May 1, 1910. For further information see page 453.

|                                     |  |
|-------------------------------------|--|
| Acetone-Bromoform.                  | Allyl Thiourea.                                |
| Acetone-Chloroform.                 | Alpha monobrom-isovaleryl-urea.                |
| Acetozone.                          | Alphozone.                                     |
| Acetozone Inhalant.                 | Alumini Naphtholsulphonas.                     |
| Acetparamidosalol.                  | Aluminum Betanaphthol-Disulphonate.            |
| Acetphenetidn.                      | Alumnol.                                       |
| Acet-Theocin-Sodium.                | Alypin.  |
| Acetylparamidophenol Salicylate.    | Amidoacetphenetidn Hydrochlorid.               |
| Acetylparethoxy-Phenyl-Urethane.    | Aminoform.                                     |
| Acetylsalicylic Acid.               | Ammonium Hypophosphite.                        |
| Acidum Sulphanilicum.               | Ammonium-Ichthylol.                            |
| Acidum Tannicum Diacetyllcum.       | Ammonium Ichthylol Sulphonate.                 |
| Adnephryn.                          | Ammonium Sulpho-Ichthyolate.                   |
| Adnephryn Emollient.                | Ampules Iron Arsenite Solution.                |
| Adnephryn Oil Spray.                | Amyl Valerate.                                 |
| Adnephryn Solution.                 | Anesthesin.                                    |
| Adnephryn Suppositories.            | Anthrastol.                                    |
| Adrenalin.                          | Antipyrina cum Ferro.                          |
| Adrenalin Ointment.                 | Antipyrin.                                     |
| Adrenalin and Chloretone Ointment.  | Antipyrin Chloralhydrate.                      |
| Adrenalin Chlorid Solution.         | Antipyrin Ferric Chlorid.                      |
| Adrenalin and Cocain Tablets.       | Antipyrin Mandelate.                           |
| Adrenalin Inhalant.                 | Antipyrin Salicylate.                          |
| Adrenalin Suppositories.            | Antiseptic—Credé.                              |
| Adrenalin Tablets.                  | Antithermoln.                                  |
| Adrin.                              | Antithyroidin—Moebius.                         |
| Adrin Compound Vaginoids.           | Apinol.  |
| Adrin Ointment.                     | Apiol.   |
| Adrin Solution.                     | Apiol, Green.                                  |
| Adrin Suppositories.                | Apium, Crystallisatum.                         |
| Adrin Tablets.                      | Argentamin.                                    |
| Adrin Tablets, Hypodermic.          | Argenti Ichthosulphonas.                       |
| Adrin and Cocain Tablets.           | Argenti Proteinias.                            |
| Adrin Spartein Tablets, Hypodermic. | Argentum Colloidale.                           |
| Æthylene Diamin.                    | Argentum—Credé.                                |
| Æthylendiamin.                      | Argentum Thiohydrocarburo-sulfonicum Solubile. |
| Æthylenethenyldiamin.               | Argonin.                                       |
| Æthylis Phenylcarbamas.             | Argyrol.                                       |
| Æthylis Salicylas.                  | Argyrol Ointment—M. E. S. Co., 10 per cent.    |
| Agar-Agar.                          | Aristol.                                       |
| Agaric Acid.                        | Aristoquin.                                    |
| Agurin.                             | Aromatic Cordial.                              |
| Airoform.                           | Arsanilic Acid.                                |
| Airol.                              | Arsacetin.                                     |
| Akaralgia.                          | Arsen-Triferrin.                               |
| Albargin.                           | Arsen-Triferrin Tablets.                       |
| Albuminis Tannas.                   |  |
| Allyl Sulphocarbamid.               |  |

- Arsen-Triferrol.  
 Aspirin.  
 Atoxyl.  
 Atoxyl Tablets, Hypodermic,  
 $\frac{1}{3}$  grain.  
 Atropinmethy! Nitrate.  
  
 Barium Chlorid.  
 Benzo-Formal Comp.  
 Benzoaric Acid.  
 Benzonaphthol.  
 Benzosalin.  
 Benzosol.  
 Benzoyl-Beta-Naphthol.  
 Benzoyl-Ethyl-Dimethylamino-  
 propanol Hydrochlorid.  
 Benzoyl-guaiacol.  
 Benzoylpseudotropein Hydro-  
 chlorid.  
 Berberin Hydrochlorid.  
 Beta-Eucain Hydrochlorid.  
 Beta-Eucain Lactate.  
 Beta-Naphthol Benzoate.  
 Betol.  
 Bile Salts.  
 Bile Salts-Fairchild.  
 Bilein.  
 Bilein Pills.  
 Billets of Cocain, Schieffelin.  
 Birch Tar and Formaldehyd.  
 Bismal.  
 Birmuth Betanaphtholate.  
 Bismuth Hydrate Comp.  
 Bismuth and Iron Citrate,  
 Wellcome.  
 Bismuth and Lithium Citrate  
 (Soluble), Wellcome.  
 Bismuth Methylen-Digallate.  
 Bismuth Oxyiodogallate.  
 Bismuthal.  
 Bismuthi Iodosubgallas.  
 Bismuthi Subgallas.  
 Bismuthi Tribromphenolas.  
 Blandin Comp.  
 Borneol Salicylate.  
 Brometone.  
 Brominized Sesame Oil, 10%  
 Bromipin.  
 Bromipin, 33  $\frac{1}{3}$  per cent.  
 Bromipin solidum saccharatum.  
 Brom-isovaleryl bromid.  
 Bromo-Mangan.  
 Bromopeptone.  
 Bromural.  
 Brovalol.  
 Butyl-Chloral Hydrate.  
  
 Calcium Ichthyol.  
 Calcium Lactate.  
 Calcium Moniodobehenate.  
 Calomelol.  
 Calomel Ointment.  
 Camphorated Validol.  
 Capsulæ Antithyroidæ.  
 Carbonyl Quinin.  
 Carbosant.  
 Casca-Laxative.  
 Caseinsilver.  
 Casein-Sodium.  
 Celloidin.  
 Cephaelin.  
 Chilblain Soap.  
 Chinaphenin.  
 Chininum Æthylcarbonicum.  
 Chininum Lygosinatum.  
 Chloralamid.  
 Chloral Butylicum.  
 Chloralformamid.  
 Chlorbutanol.  
 Chloretone.  
 Chloretone Inhalant.  
 Chologestin.  
 Cinnamyl Guaiacol.  
 Citarin.  
 Cocain and Adrenalin Oint-  
 ment—M. E. S. Co.  
 Codethylin Hydrochlorid.  
 Colalin.  
 Colalin Laxative.  
 Colchi-Methyl Capsules.  
 Collargol.  
 Collargol Ointment.  
 Colloidal Calomel.  
 Colloidal Silver.  
 Colorless Coal Tar.  
 Comp. Capsules of Glycero-  
 phosphates.  
 Comp. Emulsion Petroleum, S.  
 & D.  
 Comp. Yellow Oxid and Ad-  
 renalin Oint.—M. E. S. Co.  
 Copper Citrate.  
 Copper Citrate, Malinckrodt.  
 Copper Citrate Ointment, 5  
 per cent.—M. E. S. Co.  
 Copper Citrate Ointment, 10  
 per cent.—M. E. S. Co.  
 Coniin Hydrobromid.  
 Coryfin.  
 Cotarin Hydrochlorid.  
 Cotarin Phthalate.  
 Cremo-Bismuth.  
 Creosotal.  
 Creosotal-Heyden.  
 Creosote Carbonate.  
 Croton Chloral Hydrate.  
 Cupro-Hemol.  
  
 Dermatol.  
 Desic. Pituitary Substance,  
 Ant. Lobe.  
 Desic. Pituitary Substance,  
 Post. Lobe.  
 Desic. Parathyroid Gland.  
 Dextrose.  
 Diacetyl-Morphin.  
 Diacetyl-Morphin Hydro-  
 chlorid.  
 Diacetyl Tannin.  
 a. b. Diamino-Ethane.  
 Diazyme Essence.  
 Diazyme Glycerole.  
 Diethylbarbituric Acid.  
 Diethylenediamin.  
 Diethylglycocol-Guaiacol Hy-  
 drochlorid.  
 Diethylmalonylurea.  
 Digalen.  
 Digestive Ferments.  
 Digitalein Crude.  
 Digitalin True.  
 Digitalin French.  
 Digitalin German.  
 Digitonin.  
 Digitoxin.  
 Digipuratum.  
 Di-Iodo-Hydroxy-Propane.  
 Di-Isobutyl-Cresol Iodid.

Dimethylamidoantipyrin.  
 1, 3-Dimethyl-Xanthin.  
 1, 7-Dimethyl-Xanthin.  
 Iodol.  
 Dionin Ointment—M. E. S.  
 Co., 5 per cent.  
 Dioxyfluoran.  
 Diquinin Carbonic Ester.  
 Disuccinyl Peroxid.  
 Diuretin.  
 Dolomol.  
 Dry Peptonoids.  
 Dunbar's Serum.  
 Duotal.  
 Duotal-Heyden.  
 Duotonol.

Elixir Buchu, Juniper and  
 Acetate Potassium, P.-M.-Co.  
 Elixir Duozyma.  
 Elixir Eupnein.  
 Elixir of Enzymes.  
 Flagle Acid.  
 Emetin Hydrochlorid.  
 Emphyroform.  
 Emulsion Cloftlin.  
 Enule Soap Compound.  
 Enzymol.  
 Epicarlin.  
 Epinephrin.  
 Epinephrin Hydrate.  
 Ergotin Citrate.  
 Ergotin Roche.  
 Ericin.  
 Erpiol-Dr. Shrader.  
 Erythrol Tetranitrate.  
 Essence of Pepsin—Fairchild.  
 Essentia Panasi.  
 Ethane Diamin.  
 Ethenyl-Paradiethoxy-Di-  
 phenyl-Amidin Hydrochlorid.  
 Ethyl Bromid.  
 Ethyl Carbamate.  
 Ethyl Chlorid.  
 Ethylenediamin.  
 Ethylenediamin Solution 10  
 per cent.  
 Ethylene-Diamin-Silver-Nitrate  
 Ethylene-Diamin Tricresol.  
 Ethylene-Ethenyl Amidin.  
 Ethylene-imin.  
 Ethylglycolic Acid Ester of  
 Menthol.  
 Ethyl-Morphin Hydrochlorid.  
 Ethyl Salicylate.  
 Eucaïn.  
 Eucaïn Hydrochlorid-B.  
 Eucaïn Lactate.  
 Eucaloids.  
 Eucamul.  
 Euchinin.  
 Eugallol.  
 Eumydrin.  
 Euphorin.  
 Eupphthalmin.  
 Eupphthalmin Hydrochlorid.  
 Eupyrin.  
 Euquinin.  
 Euresol.  
 Euresol Soap.  
 Europhen.  
 Eusemin.  
 Exodin.  
 Ext. of Red Bone Marrow.

Extractum Pancreaticum In-  
 tegrum.

Ferrichthyl.  
 Ferric Ichthyl.  
 Ferripyrin.  
 Ferri Vitellinum Syntheticum.  
 Ferro-Mangen, Dieterich.  
 Ferropyrin.  
 Ferrous Lactate.  
 Fibrolysin.  
 Fillicic Acid, Amorphous.  
 Fillicic Acid and Related Sub-  
 stances.  
 Filmaron.  
 Filmaron Oil.  
 Fluoresceïn.  
 Formalin.  
 Formalin Gelatin.  
 Formic Acid.  
 Formin.  
 Formin Salicylate.  
 Fortoin.  
 Fructose.  
 Fruit Sugar.

Gallogen.  
 Gardner's Syr. C. P. Hypo-  
 phosphate of Ammonium.  
 Gelatosesilver.  
 Gelsemin Hydrochlorid.  
 Glutol, Schleich.  
 Glycerinophosphates.  
 Glyceritum Lecithini.  
 Glycerodin.  
 Glycerole Lecithin.  
 Glycerole Trypsin-Armour.  
 Glycerophosphates.  
 Glycocol-paraphenetidinhydro-  
 chlorid.  
 Granular Effervescent Bromid  
 and Acetanilid Compound.  
 Granular Effervescent Caffeïn  
 and Sodium Bromid Comp.  
 Granular Effervescent Carls-  
 bad Salt (Artificial)  
 Granular Eff. Carlsbad Salt  
 (Artificial) with Phenol-  
 phthaleïn, Mulford.  
 Granular Effervescent Sodium  
 Sulphate.  
 Guaiacol Benzoate.  
 Guaiacol Carbonate.  
 Guaiacol Carbonate Comp.  
 Guaiacol Cinnamate.  
 Guaiacol Methylglycolate.  
 Guaiacol Salicylate.  
 Guaiacol Salol.  
 Guaiacolglycerylester.  
 Guaiamar.  
 Guajasanol.

Hæmolum.  
 Hæmolum Cupratum.  
 Hedonal.  
 Helmitol.  
 Hemaboloids.  
 Hemogallol.  
 Hemoglobin Deoxidized by  
 Zinc, Merck.  
 Hemoglobin.  
 Hemol.  
 Hemoquinin.

- Heroin.  
 Heroin Hydrochlorid.  
 Heromal.  
 Heroterpin.  
 Hexahydroxy-Anthraquinone.  
 Hexamethylenamin.  
 Hexamethylenamin Methylen-  
 citrate.  
 Hexamethylenetetramin Salicyl-  
 ate, Merck.  
 Hexamethylene-Tetramin-Tan-  
 nin.  
 Holadin.  
 Holadin and Bile Salts, Fair-  
 child.  
 Holocain and Adrenalin Oint.  
 —M. E. S. Co.  
 Holocain Hydrochlorid.  
 Homatropin Hydrochlorid.  
 Hydrargyri Chloridum Mite  
 Colloidale.  
 Hydrargyri Ichthosulphonas.  
 Hydrargyri Nucleinas.  
 Hydrargyri Succinimidum.  
 Hydrargyrum Thiohydrocar-  
 buro-Sulfonicum.  
 Hypnal.  
  
 Ichthalbin.  
 Ichthargan.  
 Ichthermol.  
 Ichthoform.  
 Ichthyol.  
 Ichthyol Albuminate.  
 Ichthyol Formaldehyd.  
 Iodalbin.  
 Iodipin.  
 Iodipin, 25 per cent.  
 Iodized Sesame Oil, Merck,  
 10 per cent.  
 Iodized Sesame Oil, 10 %  
 Iodochloroxyquinolin.  
 Iodoformalbumen.  
 Iodoformogen.  
 Iodo-Mangan.  
 Iodone Oil.  
 Iodone Ointment.  
 Iodoso-Di-Isobutyl-Cresol.  
 Iodothylin.  
 Iothion.  
 Islands of Langerhans.  
 Isobutyl-Orthocresol Iodid.  
  
 Kefir Fungl.  
 Kelene.  
 Keratin.  
 Kinate of Piperazin.  
 Kresamin.  
  
 Lac Bismo.  
 Lactophenin.  
 Laminoids Ferruginous (Nas-  
 cent).  
 Lecibrin.  
 Lecithin.  
 Lecithin Solution.  
 Lecithol.  
 Lenigallol.  
 Levulose-Schering.  
 Liquid Peptonoids.  
 Liquor Argentamini.  
 Liquor Ferro-Mangani Bromo-  
 peptonati, Dieterich.  
 Liquor Ferro-Mangani Iodo-  
 peptonati, Dieterich.  
 Liquor Ferro-Mangani Pepton-  
 ati, Dieterich.  
 Liquor Santaiva (S. & D.).  
 Liquor Suprarenalis, P., D. Co.  
 Liquor Triferrini, Knoll.  
 Lithium Ichthyol.  
 Lubraseptic.  
 Lycetol.  
 Lygosin Sodium.  
 Lysidin.  
  
 Magnesium Stearate.  
 Maltine.  
 Maltine Ferrated.  
 Maltine with Cascara Sagrada.  
 Maltine with Cod Liver Oil.  
 Maltine with Creosote.  
 Maltine with Hypophosphites.  
 Maltine with Olive Oil and  
 Hypophosphites.  
 Maltine with Phosphate of  
 Iron, Quinia and Strychnia.  
 Maltine with Wine of Pepstin.  
 Malto-Yerbine.  
 Maltzyme.  
 Mammary Substance, Armour.  
 Mammary Substance Tablets,  
 Armour.  
 Masked or Non-Ionic Iron.  
 Massolin.  
 Medicinal Foods.  
 Medinal.  
 Medinal Suppositories.  
 Menthyl Valerate.  
 Mercuran.  
 Mercuric Benzoate.  
 Mercuric Cyanid.  
 Mercuric Oxycyanid.  
 Mercuric Salicylate.  
 Mercuric Sulphate-Ethylene-  
 diamin.  
 Mercurol.  
 Mercury Ichthyolate.  
 Mercury Nucleinate.  
 Mercury Succinimid.  
 Mergal.  
 Mesotan.  
 Meta-Amido-Para-Oxybenzoate  
 of Methyl.  
 Methaform.  
 Methylatrophin Nitrate.  
 Methyl Chlorid.  
 Methyl-diethylene Diamin Tar-  
 trate.  
 Methylenditanin.  
 Methylene-Citrylsalicylic Acid.  
 Methylene-Dicocoin.  
 Methylglyoxalidin.  
 Methylpropylcarbinol Ure-  
 thane.  
 Methyl-Santal.  
 Methyl-Oxymethyl Salicylate  
 Milk Curdling Ferments.  
 Milk Sugar Rennet.  
 Mistura Bismuthi, Hart.  
 Mistura Bismuthi Subcarbon-  
 atis Hydrati, Mulford.  
 Monacetyl-Resorcinol.  
 Monochloral Antipyrin.  
 Morphina Acetylata.  
 Monoglycol Ester of Salicylic  
 Acid.



Moniodobehenate of Calcium.  
Monotal.  
Morphinæ Aethylatæ Hydro-  
chloridum.  
Morphinæ Meconas.  
Morphin Meconate.

Naphthalol.  
Naphtholis Benzoas.  
Naphtholis Salicylas.  
Naphthol-Salol.  
Neurocain.  
Neuro-Lecithin, Abbott.  
Neuronidia.  
Nioform.  
Novargan.  
Novaspirin.  
Novocain.  
Novocain Nitrate.  
Novocain Tab., Hypoderm.,  $\frac{1}{4}$   
gr.  
Nucleins and Nucleic Acid.  
Nutrose.

Ointment of Soluble Metallic  
Silver.  
Oleoresina Apil.  
Oleoresin of Parsley Seed.  
Oleum Pini.  
Oleum Ricini Dulce.  
Orchic Substance, Armour.  
Orchic Substance Tablets, Ar-  
mour.  
Orthoform-New.  
Orthoform-New Hydrochlorid.  
Orphol.  
Orphol Tablets.  
Osmium Tetroxid.  
Ovarian Substance, Armour.  
Ovarian Substance Tablets,  
Armour.  
Ovoferrin.  
Oxaphor.  
Oxycamphor.  
Oxynaphthyl Ortho-Oxytoluic  
Acid.  
Oxone.  
Oxyntin.

Panase.  
Panase Essence.  
Panase Tablets.  
Panopepton.  
Paracotoin.  
Para Coto.  
Paraformaldehyd.  
Parahemoglobulin.  
Paramidobenzoic Acid Ethyl  
Ester.  
Parotid Glands (Desiccated).  
Armour.  
Parotid Tablets, Armour.  
Parsley Camphor.  
Pegnin.  
Pentan-2-Ol-urethane.  
Peptone.  
Perhydrol.  
Perogen Bath.  
Peroxid Zinc Soap.  
Phenacetin.  
Phenacetin-Urethane.  
Phenamin.  
Phenetidin Quinin Carbonic  
Acid Ester.

Phenocoll Hydrochlorid.  
Phenocoll Salicylate.  
Phenolphthalein.  
Phenylcarbamic Acid Ethyl  
Ester.  
Phenyldimethyl pyrazolon.  
Phenylethylurethane.  
Phenylglycolantipyrin.  
Phenylglycolyl-Methyl-Vinyl-  
Diacetonalkamin Hydro-  
chlorid.  
Phenyl Urethane.  
Phloridzin.  
Picric Acid.  
Piperazidin.  
Piperazin.  
Piperazin Quinate.  
Podophyllin.  
Pollantin, Fall.  
Pollantin Powder, Fall.  
Potassil Hydrargyro-Iodidum.  
Potassium Gualacol-Sulphon-  
ate.  
Potasslum Mercuric-Iodid.  
Propionyl-Phenetidin.  
Protan.  
Protargol.  
Protein Silver Salt.  
Pulvis Iodin Compositus.  
Purified Extract of Ergot.  
Pyramidon.  
Pyramidon Acid Camphorate.  
Pyramidon Neutral Camphor-  
ate.  
Pyramidon Salicylate.  
Pyrogallol Triacetate.  
Pyroxylin.

Quartanol.  
Quassin.  
Quinin and Urea Hydrochlorid.  
Quinin Ethyl Carbonate.  
Quinin Lygosinate.  
Quinin Salicylic Ester.

Red Bone Marrow.  
Red Bone Marrow, Extract of.  
Red Gum.  
Reduced Hemoglobin.  
Regulin.  
Resorcin Monacetate.  
Resorcinolphthalein.  
Rhodallin.  
Rufigallic Acid.

Sabromin.  
Sajodin.  
Salazolon.  
Sal Ethyl.  
Salicylate of Guaiacol.  
Salicylic Ester of Santalol.  
Salicylquinin.  
Saliformin.  
Salinaphthol.  
Salipyrzolon.  
Salipyrin.  
Salochinin.  
Salophen.  
Saloquinin.  
Saloquinin Salicylate.  
Sanguinarin Nitrate.  
Santalolis Salicylas.  
Santalyl Carbonate.  
Santyl.

- Secacornin.  
 Serum Antithyroideum, Merck.  
 Sextonol.  
 Sidonal.  
 Silvercasein.  
 Silver Citrate.  
 Silver Ichthyolate.  
 Silver Lactate.  
 Silver Lactate-Credé.  
 Silver Proteinate.  
 Silver Sulphichthyolate.  
 Silver Vitellin.  
 Soamin.  
 Sodium Aminophenyl arsenate.  
 Sodium Anhydromethylene Citrate.  
 Sodium Arsanilate.  
 Sodium Cacodylate.  
 Sodium Caseinate.  
 Sodium Cinnamate.  
 Sodium Diethyl-Barbiturate.  
 Sodium Dimethylarsenate.  
 Sodium Ichthyol.  
 Sodium Ichthyolsulphonate.  
 Sodium Lygosinate.  
 Sodium Oleate.  
 Sodium Perborate.  
 Sodium Peroxid.  
 Sodium Phenylacrylate.  
 Soloid Mercuric Potassium Iodid.  
 Soloid Nizin.  
 Soluble Ferric Arsenite.  
 Soluble Theocin.  
 Solution of Formaldehyd.  
 Sol. Hydrogen Dioxid, 30 %.  
 Spirossal.  
 Spleen (Desiccated), Armour.  
 Spleen Tablets, Armour.  
 Stovain.  
 Strophanthin Thoms.  
 Stypticin.  
 Styptol.  
 Styracol.  
 Sublamin.  
 Succinic Dioxid.  
 Succinic Peroxid.  
 Sulphanilic Acid.  
 Sulphonal.  
 Sulphonethylmethane.  
 Sulphonmethane.  
 Sulphurated Potash.  
 Suprarenal Alkaloid.  
 Suprarenal Liquid.  
 Suprarenalin.  
 Suprarenalin Inhalant.  
 Suprarenalin Ointment.  
 Suprarenalin Solution.  
 Suprarenalin Triturates.  
 Syrup Cannabis Compound.  
 Syr. Ammonii Hypophosphitis, Gardner.  
 Tabella Colalinæ Cum Ext. Rhamni Pursh., Crowell.  
 Tablets Acet-Phenetidin Compound.  
 Tablets Atoxyl and Iron.  
 Tabloid Coffee Mint, B. W. & Co.  
 Tabloid Ergotinine Citrate.  
 Tabloid Ergotinin Citrate and Strychnin Sulphate.  
 Tabloid (Ophthalmic) Fluorescein, B. W. & Co.  
 Tabloid Hypophosphites Comp.  
 Tabloid Mercury Succinimid (Hypodermic).  
 Tabloid Morphin Meconate (Hypodermic).  
 Tannalbin.  
 Tannate of Albumin.  
 Tannigen.  
 Tanninformaldehyd.  
 Tannin Nucleo-Proteid, Mulford.  
 Tannismuth.  
 Tannoform.  
 Tannon.  
 Tannopin.  
 Tanphenyform.  
 Tetranitrol.  
 Theobromin.  
 Theobromin and Lithium Benzoate.  
 Theobromin and Lithium Salicylate.  
 Theobromin Sodium Acetate.  
 Theobromin Sodium Salicylate.  
 Theocin.  
 Theophyllin.  
 Tephorin.  
 Thermodin.  
 Thiocol.  
 Thiol.  
 Thiol Dry.  
 Thiol Liquid.  
 Thiosinamin.  
 Thorium Nitrate.  
 Thymol Iodid.  
 Thymus (Desiccated) Armour.  
 Thymus Tablets, Armour.  
 Thyreoidectin.  
 Thyresol.  
 Thyroidin.  
 Tonic Hypophosphites.  
 Tonols.  
 Triacetylpyrogallol.  
 Tribromphenol-Bismuth.  
 Tribrom-Tertiary Butylalcohol.  
 Trichlorbutylidene Glycol.  
 Trichlor-Tertiary-Butylalcohol.  
 Triferrin.  
 Triferrol.  
 Trikresol.  
 Trional.  
 Trioxymethylene.  
 Triphenin.  
 Tropacocain Hydrochlorid.  
 Tropein.  
 Trypsin, Armour.  
 Trypsogen.  
 Tumenol.  
 Tumenol-Ammonium.  
 Tumenol Venale.  
 Tussol.  
 Unguentum Credé.  
 Urea.  
 Urethan, Hoechst.  
 Urethane.  
 Uriform.  
 Uropherin-B.  
 Uropherin Benzoate.  
 Uropherin-S.

Uropherin Salicylate.  
Urotropin.  
Urotropin Salicylate.

Valerianic Acid Diethylamid.  
Valeryldiethylamid.  
Valldol.  
Valldol Camphoratum.  
Valyl.

Vanillin-Ethylcarbonate-Para-  
Phenetidin.

Veroform Antiseptic.  
Veroform Germicide.  
Veronal.  
Veronal-Sodium.  
Vioform.  
Vioform Gauze.

Neroform.

Zinc Permanganate.  
Zinc Peroxid.

# SERUMS AND VACCINES

Antidiphtheric Globulins.  
Antidiphtheric Globulins, dry  
(P. D. Co.).

Antidiphtheric Globulins (P.  
D. Co.).

Antidiphtheric Serum.

Antidiphtheritic Serum, U. S.  
P. (P. D. Co.).

Antidiphtheritic Serum (Mem.  
Inst.).

Antigonococccic Serum.

Antigonococccic Serum (P. D.  
Co.).

Antipneumonic Serum.

Antistreptococcus Serum.

Antipneumococccic Serum (Mul-  
ford).

Antistreptococccic Serum,  
Antistreptococccic Serum (Mul-  
ford).

Antistreptococccic Serum (P.  
D. Co.).

Antistreptococccic Serum, Poly-  
valent (Schieffelin).

Antistreptococcus Serum,  
Aronson's (S. & G.).

Antistreptococccic Serum.  
Hoechst (Koechl).

Antistreptococcus Serum, Ery-  
sipelas (B. W. Co.).

Antistreptococcus Serum,  
Rheumatism (B. W. Co.).

Antistreptococcus Serum, Poly-  
valent (B. W. Co.).

Antistreptococcus Serum, Puer-  
peral fever, (B. W. Co.).

Antistreptococcus Serum, Scar-  
latina (B. W. Co.).

Antitetanic Serum (P. D. Co.).

Antitoxin, Conc., globulin  
(Lederle).

Antityphoid Serum.

Antityphoid Serum (B. W.  
Co.).

Bacillus Coli Vaccine.

Bacillus Pyocyaneus.

Coli-Bacterin (Mulford).

Diphtheria Antitoxin (Alex-  
ander).

Diphtheria Antitoxin, Behring  
(Koechl).

Diphtheria Antitoxin, Conc.,  
Globulin (Mulford).

Diphtheria Antitoxin, Conc.  
Globulin (Health Dept., N.  
Y. C.).

Diphtheria Antitoxin, Conc.  
(Nat. Vaccine Inst.).

Diphtheria Antitoxin, Conc.  
(Stearns).

Diphtheria Antitoxin (Cutter).

Diphtheria Antitoxin (Hub-  
bert).

Diphtheria Antitoxin (Schief-  
felin).

Diphtheria Antitoxin Serum  
(B. W. Co.).

Diphtheria Antitoxin, U. S. P.  
(Stearns).

Erysipelas and Prodigiosus  
Toxins, Coley (P. D. Co.).

Gonococcus Vaccine.

Gonococccic Vaccine (Nat. Vac-  
cine Inst.).

Gonococcus Vaccine (P. D.  
Co.).

Micrococcus Neoformans.

Neisser-Bacterin (Mulford).

Neoformans-Bacterin (Mul-  
ford).

Normal Horse Serum.

Normal Horse Serum, Sterile,  
Nat. Vaccine Inst.

Pneumo-Bacterin (Mulford).

Pneumococcus Vaccine.

Pneumolytic Serum (Stearns).

Pyocyano-Bacterin (Mulford).

Staphylo-Bacterin (Mulford).

Staphylococcus Vaccines.

Staphylococcus Alb., Aur., Cit.,  
combined (P. D. Co.).

Staphylococcus P. Alb. (P. D.  
Co.).

Staphylococcus P. Aur. (P. D.  
Co.).

Staphylococcus P. Cit. (P. D.  
Co.).

Strepto-bacterin (Mulford).

Streptococccic Serum, Polyva-  
lent (Cutter).

Streptococcus Vaccine.

Streptococcus Vaccine (P. D.  
Co.).

Streptolytic Serum (Stearns).

Tetanus Antitoxin.

Tetanus Antitoxin (Mulford)

Tubercle Bacilli, Dead, Dixon's  
Suspension (Alexander).

Tubercle Bacilli Extrac-  
t Dixon's (Alexander).

- Tubercle Germs, Moist Dead (P. D. Co.).  
 Tuberculin, R. (Mulford).  
 Tuberculin, B. E., con. (P. D. Co.).  
 Tuberculin, B. F., Denys (Mulford).  
 Tuberculin, B. E., Human, Koch (Alexander).  
 Tuberculin, B. E., Koch, (Koechl).  
 Tuberculin, B. E. (Mulford).  
 Tuberculin, B. F. (P. D. Co.).  
 Tuberculin, B. F., Human, (Alexander).  
 Tuberculin, Conc., Koch, (Cutter).  
 Tuberculin, Denys.  
 Tuberculin, Denys, B. F. (Cutter).  
 Tuberculin Discs for Eye, Reaction (P. D. Co.).  
 Tuberculin, Eye Test, Solution and Tablets (Mulford).  
 Tuberculins for Detre Test (Alexander).  
 Tuberculin for Eye Test, (Alexander).  
 Tuberculin for Skin Test, von Pirquet (Alexander).  
 Tuberculin, New, Koch, B. E.  
 Tuberculin, New, Koch, T. R. (Koechl).  
 Tuberculin, New, T. R.  
 Tuberculin Ointment Capsules, Moro (Alexander).  
 Tuberculin Ointment (Mulford).  
 Tuberculin, Old, Conc. (Cutter).  
 Tuberculin, Old, Koch (Koechl).  
 Tuberculin, Old, Koch, (P. D. Co.).  
 Tuberculin, Old, O. T.  
 Tuberculin, Old, O. T. (Mulford).  
 Tuberculin, Orig., O. T., Koch (Alexander).  
 Tuberculin, Purified (Cutter).  
 Tuberculin Residue T. R., Human, Koch (Alexander).  
 Tuberculin, T. R. (P. D. Co.).  
 Typhoid Vaccine.  
 Tuberculosis Diagnostic, Hoechst, Dry (Koechl).  
 Typho-bacterin (Mulford).  
 Vaccine, Antirabic.  
 Vaccine, Antirabic (Alexander).  
 Vaccine, Glyc. (P., D. Co.).  
 Vaccine Lymph, Glyc. (Mulford).  
 Vaccine Virus.  
 Vaccine Virus (Cutter).  
 Vaccine Virus, Glyc., Lymph (Alexander).  
 Vaccine Virus, Glyc. (Nat Vaccine Inst.).  
 Vaccine Virus, Glyc. (Schiefelin).

# GENERAL DISEASES

---

## INDIVIDUAL TENDENCIES

In this era of materialism the aversion to accepting anything as a fact, unless it can be ocularly, aurally, chemically, microscopically or bacteriologically demonstrated, has relegated the "temperaments," diatheses, and even atavistic heritages, to the realm of oblivion. Sir Dyce Duckworth, in an address reported in the *Lancet*, March 7, 1908, calls the attention of the profession to the consideration of the factor of inheritance in the treatment of disease.

For several years teachers of therapeutics have been endeavoring to teach the necessity of individualizing the patient, but even they have forgotten the necessity for also individualizing the family. Such individualization is not only of special advantage in the treatment of chronic conditions, but is also of advantage in the treatment of acute disease.

There is no more doubt that an individual inherits family weakness and family strength, or, if the phrase is preferred, family tendencies, than there is that he inherits the features and general physique of his parents and grandparents.

While it may be going a step backward to speak of temperaments, we certainly should consider, as pointed out by Duckworth, the tendencies of the individual which may be enumerated as "arthritic," scrofulous or lymphatic, nervous and bilious. These tendencies are often recognizable by the general appearance and physical findings but if not can almost always be developed by a careful investigation into the family history of the patient.

## THE FAMILY HISTORY

It should be the rule of the physician to inquire into the family history as carefully with every new patient



as is required in an insurance examination. The discovery of instances of arteriosclerosis, cardiac disturbances, rheumatism, gout, or other joint disturbances in a family would show the arthritic tendency. The discovery of glandular disturbances, tuberculosis, pneumonias, adenoid and tonsillar disturbances, and anemias, in a family would show a tendency to "scrofulous" and lymphatic conditions which so frequently precede tuberculosis. While the word scrofulous has come into disuse and it may be a step backward to use it, Duckworth believes that it may be applied to the condition of childhood so long recognized under that name. With instances of neuroses and neurotic conditions, perhaps mental aberrations functional cardiac disturbances and nerve disturbances in the family, the patient will probably be neurotic and all symptoms should be considered accordingly. If the family shows a series of digestive troubles, liver, stomach, intestinal and kidney, the old term of "bilious temperament" or tendency may not be misapplied, if it is thoroughly understood what it signifies.

It, therefore, is of vital importance to the patient that his physician should know and recognize the diathesis or predisposition to certain types of disease that he has inherited, so that whatever treatment his present condition may call for, the tendency to the family weakness may be at the same time properly combated.

#### THE DIATHESES

To be specific, a patient who has had a uric acid colic, or who has slightly increased blood pressure, or slight shooting pains in the joints, and whose family shows a tendency to gout and arthritic troubles, should not be dismissed as soon as his present condition is improved without an arrangement of his diet and life that will prevent, at least, the immediate development of a more serious condition.

A patient with pneumonia whose family shows a tuberculous tendency should not be dismissed from professional care as soon as the lung has apparently recovered. Such a patient should have a prolonged rest and fresh air cure, after he has apparently recovered, and should be carefully watched for months.

Again, a patient who has sleeplessness, who is over-working mentally, whose family is neurotic, and who comes for treatment on account of loss of appetite and a general debilitated condition, should not be dismissed as soon as he has improved in the conditions for which he sought aid without most careful advice as to the necessity for vacations, the necessity for more hours of sleep, the avoidance of too much tea, coffee, alcohol, tobacco and narcotics. Such a patient should be carefully advised of the dangers of taking nostrums and "pain-stops" and any hypnotic. Such patients to whom pain is not only really more intense than in other individuals, but whose pain is always exaggerated, become profitable prey for the exploiters of quack medicines and quack treatments of all kinds.

Lastly, a patient who has recurrent "bilious attacks," or other attacks of acute indigestion, and whose family shows a tendency to gastrointestinal and other abdominal disturbances, should not be lightly dismissed as soon as the acute condition has been overcome. He should be carefully advised as to his diet and the care of his stomach and bowels, and the avoidance of repeated excesses.

In other words, a careful study into the family history of a patient offers the opportunity to exercise the highest aim of the medical profession, viz.: such therapeutic advice as will prevent disease.

---

### OPTIMISM AND PESSIMISM

Nothing hinders the advance of scientific therapy more than these two attitudes on the part of physicians toward the treatment of disease. On the one hand stand numbers of practitioners who hasten into print lauding the satisfactory results of first one treatment and then another, generally medicinal, of first one and then another disease. These same optimistic physicians will many times be found the following year lauding an entirely different treatment from that they advised and found so successful the preceding year.

On the other hand there is a large class of clinicians whose names are significant of the best in medical research and whose teaching is listened to with respect

from one end of this country to another, but who are so pessimistic as to the treatment, or the management, of disease as to prevent the scientific investigations necessary to develop common sense and rational therapy. These physicians write and teach largely of differential diagnosis, pathologic findings, and of the symptoms of a disease in their totality. They gladly accept, describe and advise any antitoxic or specific treatment that is found valuable in a disease. They also carefully describe and advise physical therapies, climatic changes, and the surgeons describe all the operative interferences to cure disease. But it is exceedingly rare for one of this class of physicians, whose duty it is to teach, to describe or advise the best method of overcoming the many troublesome symptoms that occur in the course of most diseases. Although in their personal practice they overcome difficulties, tide patients over serious conditions, and actually prolong and save life by medicinal treatment as well as by scientific management, they are unwilling, for some unknown reason, to attribute such successful outcome in these cases to the advantages of any drug or set of drugs. They even seem at times to think that it is an acknowledgment of failure, or something derogatory to their prestige, to admit that the proper use of a drug has really caused their general treatment to be a success.

#### UNSCIENTIFIC PRESCRIBING

Such lack of scientific therapeutic teaching causes a large number of general practitioners to listen to enthusiastic proprietary detail men and subsequently to use a preparation for a given condition the active ingredient of which the teacher of medicine may have long used, but in a simpler and less expensive manner. The physician using such a preparation and obtaining good results frequently rushes into print and lauds the preparation or combination of drugs as a cure for that condition or disease, when really it is the principal active ingredient of it that did the work, and which perhaps had been used for that purpose for years.

The thing needed, then, in scientific therapeutics is more careful instruction in details by the teachers and bedside clinicians, and, as pointed out by Gottheil, a willingness on the part of the general practitioner to

describe his failures as well as his successes. Also the general practitioner who writes of his therapeutic successes should constantly bear in mind, first, the trend of troublesome conditions to recovery; second, that it is not always the last drug, preparation or treatment that benefited the patient, but that the previous treatment really caused the cure; third, that many a new drug or new preparation offered with the enthusiasm of the physician cures a patient by psychic effect, much as often does a change of physicians or a change of environment.

#### THE ICONOCLAST

In this connection a paragraph from an article by W. S. Gottheil, in *THE JOURNAL*, Nov. 21, 1908, may well be quoted:

"The rôle of image-breaker is always an ungrateful one, and especially so in therapeutics. In the face of the essential problem and crux of medical endeavor, positive claims have an authority and a charm that give them every advantage over merely negative criticism. Yet the iconoclast is as necessary as the builder, and sometimes even more so. A franker and freer discussion, less reticence as to failures, and a more judicial attitude toward successes would save much misconception and much useless labor and suffering. An extra-medical observer, studying the files of our professional journals, would conclude that there are few if any incurable affections, and that the chief difficulty of the modern therapist is the selection of one among the many curative measures that are recommended. How far the facts are in accord with this each one of us can judge from personal experience."

Therapeutics means everything that is of importance to the patient. All the scientific investigations in physiology, etiology and pathology are of no value to him unless the knowledge gained therefrom can be therapeutically applied. While anything that borders on the symptomatic treatment of disease should be discouraged, it is only the consultant, the book on practice, and the lecturer, who may ignore the treatment of troublesome symptoms. The physician's visit to a patient is not of the greatest value, and the consultant has not finished his services until the troublesome symptoms



of a patient have been thoroughly discussed and methods devised aiming toward their amelioration. Many a loyal patient has been driven from one physician to another, and finally to quackery, by professional scientific neglect of symptoms which to him appear of most importance.

It is a mistake for a physician to declare that he has cured a disease or condition. What he does do is to "manage" the disease and the patient who has the disease and it is the details of this management, hygiene, nursing, diet, physical treatments and, lastly, medicinal necessities that comprises the totality of the therapy of disease.

#### THERAPEUTICS MORE THAN MEDICINE

It is a mistake, and one that is very prevalent, to believe that therapeutics means medicinal treatment only. Therapeutics covers the whole field of management of disease from the cathartic dose of calomel through a necessary laparotomy, to perhaps a convalescence in southern California. The whole range of what shall be done for a patient with a given condition or disease to the final cure, or death, of that patient is therapy.

A disease can not be correctly treated unless the following facts are considered:

1. Can the etiologic factor in a given disease be discovered, and can it be removed? This is the primary treatment.

2. What physiologic processes in this patient are disturbed by this disease? The aim of all treatment should be the attempt to correct such disturbed physiology, and at the same time not to disturb the normal physiologic processes.

3. The pathologic conditions which are the result of the disease should be removed, if possible; ameliorated, if removal is not possible; and never irritated or made worse by any medicinal or physical treatment. Special care should be taken that whatever treatment is deemed advisable for the patient, it should not aggravate or make worse the pathologic condition present.

4. The symptoms and signs of the disease which in their totality determine the diagnosis, and the extent to which the pathology of the disease has progressed, are in their totality of minor and secondary importance in



the treatment. On the other hand, individual troublesome symptoms must be removed or ameliorated, else normal physiologic processes which are necessary to recovery can not be performed, and toxemias that otherwise need not have occurred may perhaps be the determining cause of the non-recovery of the patient.

### PAIN AS A SYMPTOM

Of all symptoms, that of pain is the most important and the one from which the patient must have relief. It does not seem to make a great deal of difference whether such pain is pathologically excusable or present only on account of psychologic mistake, the nervous irritability and finally depression caused by it must be taken into consideration and must be treated or, better, managed. At least, pain must be prevented at any cost. This does not mean that the physician should hasten to the use of unneeded narcotics, nor that he should ever use a narcotic without regret and without the extra supervision that should always go with such treatment, but it is the skillful, thoughtful, discriminating physician who can determine the best method of eradicating the symptom of pain in each individual patient.

To carry out the medicinal treatment needed properly to manage a given disease the physician should have his drugs classified as to their utility and select the best drug for each particular object, and the best drug should be decided on after a careful consideration of its complete physiologic action. This means not only its ability to combat the condition under consideration, but also through what organs this drug is excreted, where it causes disturbed physiology, if any, and whether or not it will add to the pathology of the disease present.

Such deliberate decision will select the best drug needed for a given condition in a given patient. This is knowledge, and is not groping after the unknown and mysterious which is always the mental attitude of the physician who prescribes pharmaceutical preparations and nostrums either of unknown ingredients, or, at least, of unknown methods of preparation, which may have added solvents or correctives to a solution that should not be administered to the patient. It also naturally follows that elegance in prescription writing

and in the method of administering disagreeable drugs should be taken into careful consideration by the practitioner. Frequent consultations with his pharmacist will enable a physician either to write a prescription that embodies the best method of administering a given drug, or such consultation may develop the fact that this drug is prepared and offered in a simple, satisfactory preparation that does not contain biproducts or ingredients that are undesirable. Simple, elegant preparations offered by pharmaceutical firms are excusable, but it is inexcusable to order the mixtures prepared by these firms. A physician should be able to write a prescription to suit the needs of each individual patient.

---

### DIET IN TYPHOID FEVER

It seems almost impossible to settle this much discussed subject definitely, and it is doubtful if it ever will be determined that any one diet is the only correct one for typhoid fever. The patient, his dietary habit, and his ability to digest certain foods during typhoid fever must all be individualized. Therefore, a diet correct for one patient may be absolutely incorrect for another.

The recommended diets vary from nothing but water, or no diet, through absolute milk, entire absence of milk, liquid foods other than milk, cereal foods, to actual solid foods, including meat.

The diet in typhoid fever should never be discussed without due consideration of the management of the bowels. This means whether diarrhea should be allowed, whether laxatives should be given, or whether constipation should be caused.

In the first day or two of the fever the temperature is likely to be higher than it is on the days that immediately follow. This temperature is lowered, the tongue improved, and the patient made generally better by free purging, and a diet of little more than plenty of plain water. The purgative selected may be calomel, or may be castor oil administered in some pleasant form. Such a purgative may be repeated in two or three days if deemed advisable. There can be no question that a

clean alimentary canal modifies greatly the severity of the early typhoid symptoms.

### COLON ENEMAS

It has been lately shown that fecal deposits, seeds or other food debris may become lodged in the lower corner of the ascending colon, the cecum, and may cause inflammation or symptoms of appendicitis, and may even be a subsequent cause of appendicitis. Hence it may be found to be good treatment, in the first few days of typhoid fever, to give colon enemas of from one to two quarts of warm water, the patient lying on his right side, to aid in washing away the possible accumulations in the cecal region. Such colon washings can certainly do no harm in the first days of typhoid, and may be of marked benefit in the future course of the disease. In other words, the more thoroughly the pathologic process in the intestines, in typhoid fever, is considered from a surgical standpoint, with the aim to keep these ulcers and the inflamed intestinal mucosa as clean as possible, the less will there be secondary infection, the less will there be tympanites, the less will there be deep ulcerations, hemorrhages and perforations, the less high the fever, and the better the whole prognosis. Consequently, not only should the bowels be cleared at first, but subsequently the bowels should be moved daily. This is best done by administering every other day some gently acting saline laxative, which cleans the upper part of the intestines, tends to drain the portal circulation, to keep the liver, our Pasteur filter, in a healthy condition, and to cause an easy watery movement. Any tendency to a diarrheal condition or to too many movements from such a laxative may be stopped by the administration of 1/10 grain of morphin. The bowels are thus cleaned and subsequent excessive peristalsis inhibited, and the patient is generally at rest for the remainder of the day. On the alternate day a small glycerin enema, administered with a glass syringe, consisting of a tablespoonful of glycerin and a tablespoonful of water, will cause within ten minutes a movement of the bowels that will at least empty the descending colon and cause the expulsion of gas. Such management of the bowels seems contraindicated only by intestinal hemorrhage, signs of perforation and great prostration. Such treatment also

prevents secondary infections that keep the temperature high. In other words, less antipyretic measures are needed, if the abdomen is flat, tympanites is not present, and the patient's bowels have moved daily artificially, and the movements are not caused by diarrhea due to irritation from the disease.

The fact should be emphasized that tympanites is not a symptom of typhoid fever, but is a symptom of mismanagement, a symptom of a mistake either in the diet or in the management of the bowels. Tympanites not being present, the danger from hemorrhage and perforation is reduced to a minimum. If the patient's bowels are properly managed in typhoid, tympanites will rarely occur.

#### THE KIND OF DIET

As above stated, the exact diet that is best for the individual typhoid patient must be determined by his ability to digest, by the height of the temperature, by the behavior of the stomach (i. e., whether there is distress, nausea, or vomiting), by the amount of intestinal flatulence, and somewhat by the character of the stools. Any food, however advantageous theoretically, or however satisfactory for other patients, is contraindicated if it causes indigestion in any form, or is not digested. Theoretically, the food that causes the least mass of intestinal debris would be indicated on account of the less likelihood of food that is almost entirely digested in the upper alimentary tract forming a favorable medium and mechanical protection for pathogenic germs in the lower intestine. For this reason large amounts of milk would seem to be contraindicated, and certainly the all-milk diet is not the best for most patients who have typhoid fever. On the other hand, milk is too good, simple and generally well-digested a food for its use to be condemned in this disease. A solid diet as advocated by some, also, seems generally inadvisable. When it is considered that both high temperature and nervous disturbance caused by the disease, and also the general depression of the system, cause an interference with the production of normal gastric juice, food that requires normal conditions for digestion would seem to be contraindicated. Therefore, ordinarily a mixed diet representing the different elements of nutrition needed



to protect the system against drain and loss and consequent unnecessary debility, the so-called typhoid state, and a diet that is varied sufficiently to prevent the patient from dreading the feeding hour is the one indicated. Any nutrient that is abhorrent to the patient should not be administered, as it is well understood that the digestive secretions are not produced so well when the patient dislikes, or is disgusted by, a food.

A good mixed diet for twenty-four hours, suitable for an ordinary adult ill with typhoid fever, is represented by one pint of milk; two eggs, or the whites of three eggs; one cup of thoroughly cooked, thin oatmeal gruel; the juice expressed from a pound of chopped, round steak; a small cup of coffee, in the morning; a small portion of wine, orange, or lemon jelly made from gelatin; and enough salt and sugar in the above to make them palatable.

The milk may be administered, hot or cold, with or without salt, with or without Vichy, with or without lime water, in two or three doses, as deemed best in the individual instance. Sometimes koumys makes a valuable substitute for ordinary milk. Sometimes buttermilk may be used, and this in larger quantities.

The eggs may be given raw, beat up with a little milk, or given with lemon juice on cracked ice, may be poached, or, if the temperature is not high, soft boiled or in the form of boiled custard.

The oatmeal gruel should generally be made with milk, and thoroughly cooked, strained, and salted to suit the taste.

Meat juice is best prepared by just covering the chopped steak with water, and allowing it to stand for an hour and a half. The water and juices are then expressed out of the meat. This watery extract will then contain, besides the blood of the meat, actual muscle serum, which is a decided tonic, especially to the heart. This expressed fluid is then kept on the ice and administered, properly salted, in two or three doses.

While gelatin is generally pleasant to most patients, it also has some nutritive value, and possibly tends to aid normal coagulation of the blood, and perhaps prevent capillary bleedings from the inflamed intestines.

A patient who is accustomed to his morning coffee need not be deprived of that pleasure because he has



typhoid fever, unless there are meningeal symptoms, or meningitis is actually present.

The constant object in mind should be to administer protein (meat, eggs, milk), carbohydrate (oatmeal, sugars, or something similar), alcohol if deemed advisable, a mild cerebral stimulant (coffee or tea if thought advisable), iron, calcium (gelatin or lime water), sodium chlorid (perhaps dilute hydrochloric acid later), and water, enough of all to keep the physiologic processes as near normal as possible, while the patient is going through the long, tedious, feverish illness.

Experience seems to teach that it is best to administer nutriment to the typhoid patient in small amounts at three-hour intervals. It should, however, be arranged that the patient has normal rest. In other words, he should not be awakened from a comfortable sleep because it is time to do something to him or for him, and at regular three-hour feeding intervals should be the periods at which he is to be disturbed for other treatments. During the night, if he is not seriously ill, he should not be disturbed as often as every three hours.

With the treatment outlined, and with proper care of the mouth, the patient's tongue is rarely badly coated and should be moist, there should be no nausea, and there should be no tympanites.

### INTESTINAL ANTISEPTICS

The question that constantly arises in conjunction with the nutrition in typhoid fever is of what value are the so-called intestinal or bowel antiseptics. It is certain that the lower part of the small intestine can not be rendered aseptic. It is also just as certain that the stomach and a short distance at least of the small intestine may be made uninhabitable for pathogenic germs, without poisoning the patient. Perhaps the best stomach antiseptic is gastric juice, containing its normal amount of hydrochloric acid. If the hydrochloric acid is insufficient, pathologic germs may be present in the stomach, and certainly are likely to be present in the duodenum. Therefore, if it is considered in typhoid fever, at any period, that the hydrochloric acid is insufficient, a few drops of the dilute acid may be administered several times a day. If sodium chlorid is normally sup-

plied to the patient, except possibly in the latter part of the fever, the hydrochloric acid is probably normally present, and except for the advantage of compelling the patient to drink more acidulated water, the necessity of administering hydrochloric acid is perhaps doubtful. Certainly a too acid stomach is not desirable.

Various preparations have been offered for intestinal antiseptis which contain an extra molecule of oxygen, or are really peroxid preparations. These are also taken with large quantities of water and probably do a great deal of good.

The best antiseptic to the upper part of the intestines seems to be salicylic acid in some form, and one of the best forms is the combination with phenol, viz., phenyl salicylate (salol), which may be given in capsules without any disturbance of the stomach, as it is there undissolved and breaks up into its component parts of salicylic acid and phenol in the duodenum. A small dose of this drug (0.25 gram or 4 grains) every six hours may be given continuously through the disease, unless there is a diminished excretion of urine, or albuminuria develops, or the urine shows darkening from the phenol, which would be very rare from this sized dose. Even the non-believers in bowel antiseptics must admit that whether the colon bacilli or typhoid bacilli come to the upper part of the intestine by migration, or reach these regions through the blood stream, that it would not be so healthy for them provided salicylic acid was present in the upper intestine as though it were not present.

How good a bowel antiseptic hexamethylenamin (urotropin) is has not been determined, but in post-typhoid conditions when typhoid bacilli or colon bacilli may be present in the pelvis of the kidney or may be present in the gall bladder, it has been shown that administration of hexamethylenamin is the best treatment to prevent their remaining permanently and causing inflammation in these regions.

Thus far sour milk treatments, lactic acid germs and the administration of yeast have not been mentioned. Certainly bowel infections of most kinds are made better by the administration of yeast. The value of sour milk treatments in typhoid fever must be determined by experience. A patient, however, who is not doing well

on the diet above suggested should be put on the sour milk treatment. One of the principal objections to such treatment is that the patient's stomach soon objects to any one diet that is to be long continued, although for a few days he might accept the soured milk. On the other hand, most patients do not object to the sour drink produced either by a tablespoonful of upper brewer's yeast in a glass of water, or by the solution of a five-eighths inch cube of a compressed yeast cake in a glass of water, given two or three times a day.

---

### SALT IN FEVER

The necessity for sodium chlorid in the animal economy, even in prolonged fevers, should be remembered. The absolute milk diet with entire deprivation of salines is gradually going out of fashion. It is just as necessary for a fever patient to have a little sodium chlorid daily as it is for a man in health. If beef juices are not allowed and salt is thus not administered, one or more a day of the feedings of milk should be salted. If a patient is too ill to take nourishment, besides the water that he receives, he should be given some physiologic saline solution to keep his metabolism in working order. This is true of all serious conditions with the exception of anasarca, pulmonary edema and marked kidney insufficiency. If the patient can not swallow physiologic saline (0.6 of 1 per cent., i. e., 6 parts in 1,000), he should have twice daily a colon injection, of one pint each time, of such a solution.

Perhaps all artificially fed babies should have their food diluted with water physiologically salted (i. e., the above strength), and babies who are ill and feverish should be given a drink of this saline solution (all they will take) every three hours. Babies who receive this saline solution seem to do better than those without it, as evidenced by J. Madison Taylor's (Philadelphia) observations (*THE JOURNAL A. M. A.*, Nov. 10, 1906).

---

### MALIGNANT GROWTHS

Although we can not yet declare the exact method by which mercury inhibits the activity of the germ of

syphilis, nor exactly how it removes or causes absorption of small-celled specific growths, it is a well-known fact that mercury has the power not only to do this, but if long enough administered, can prevent syphilitic recurrences.

Dr. Bucher, Fort Lyons, Colo., has recently declared that small doses of mercury have greatly improved patients with tuberculous laryngitis, and improved tuberculous infiltrations of the lungs. The mercury in these tuberculous cases is given subcutaneously. This, then, would seem to indicate that at times mercury may remove a small-celled infiltration that is tuberculous.

### MERCURY INJECTIONS

Now Dr. William L. Harris, Providence, R. I. (*New York Medical Journal*, Feb. 27, 1909), states that for more than four years he has been using mercury hypodermatically to remove carcinomatous growths and infiltrations, and with apparent success. Such treatment is not instead of operative treatment, but as an adjunct to operative treatment. He considers that the treatment should extend over two or three years, and that the earlier it is begun the better. "For two months after operation for carcinoma" he "injects hypodermatically  $1/2$  grain of a soluble iron salt and  $1/24$  grain of arsenous acid." He also "administers subcutaneously  $2\ 1/2$  grains of salicylate of mercury, and repeats this every ten days for four times; then he administers  $1/2$  grain or 1 grain every fifteen or twenty days for the first year." In the second year he "administers 1 grain of the mercury every ten days until 10 grains have been taken, and then  $1/2$  grain once a month." He states that lately he has been using "the succinimid of mercury in  $1/5$  grain doses, subcutaneously, administering this dose every five or ten days for ten doses, and then every fifteen or twenty days." The iron and arsenic injections he states he gives from time to time as a tonic.

He is very careful not to give the mercury frequently enough or in a dose sufficient to cause salivation, and therefore watches each patient carefully. He also would not use it in an anemic patient, and during its administration frequently counts the red blood cor-

puleses to note the condition of the blood. He thinks that the combined iron and arsenic treatment is beneficial both to the patient and to the best action of the mercury.

Harris believes that this mercury treatment is inhibitory to the cancer germ or to cell proliferation.

Harris does not state why he thinks that iron and mercury are more beneficial when administered hypodermatically than when given by the stomach. There certainly seems to be, many times, an advantage in administering mercury subcutaneously rather than by the mouth or by inunction, but if mercury is beneficial in carcinomatous conditions it would probably also be of benefit when given by the mouth. In any case, the experimental dose of mercury for the treatment of cancer would be small.

---

### DIABETES MELLITUS

Dr. Oliver T. Osborne, New Haven, Conn., in the *American Journal of the Medical Sciences*, April, 1908, discusses the nature and management of this disease. He makes a distinction between diabetes mellitus and glycosuria, the former being the disease or condition in which the urine does not become free from sugar on any dietetic or medicinal treatment, while glycosuria is a temporary functional alimentary or nervous disturbance. While a frequently occurring glycosuria may be a danger signal as a forerunner of the real disease of diabetes mellitus, still, if the sugar can be made to disappear from the urine by a change in the diet, that disease is not present, but the presence of sugar in the urine shows that there is an insufficiency of the organs taking part in the glycogenic function, viz., the pancreas, suprarenals or liver. An insufficiency or an improperly correlated activity of any one of these three organs may cause sugar to appear in the urine. A temporary glycosuria may be caused by "phosphoric, lactic and hydrochloric acids, phosphorus, arsenic, and by carbonic oxid poisoning." Glycosuria may also occur as a complicating disturbance in Graves' disease, exophthalmic goiter, and during the administration of thyroid extract, showing that too much thyroid stuff in the circulation can cause glycosuria. Various disturbances in the



brain can cause, reflexly, glycosuria which will disappear if the disturbance is removed.

#### RIGID DIET MAY BE DANGEROUS

During starvation and on a rigid proteid diet in diabetes mellitus acetone soon appears in the urine, with sooner or later diacetic acid and later beta-oxybutyric acid, the last being often the derivative of the other two products. These are danger signals and acidemia is imminent and diabetic coma will soon be in evidence. The free administration of carbohydrates will cause the acetone and diacetic acid to disappear, although the excretion of sugar will be increased; it is not the amount of sugar in the urine that is momentarily dangerous. It seems demonstrated that the greater the amount of proteid diet with absence of carbohydrates and the greater the amount of fat ingested, the more acetone will appear in the urine, while the greater the amount of carbohydrates ingested the less acetone will appear in the urine.

"Diabetic coma is not due to the acetone or to the glycosuria, but is due to the diminished alkalinity and finally acid condition of the blood, and this is due largely to the beta-oxybutyric and diacetic acids." The warnings that such a condition is imminent are headaches and increased nervous irritability. The urine may show at this time a large amount of ammonia, which is probably formed from the proteins to neutralize the increased acids.

This chemical pathology of diabetes mellitus shows that it is unjustifiable to withdraw starches and sugars rapidly from the diet of a diabetic, as toxic acidemia may be the result.

#### DIETETIC TREATMENT

The dietetic treatment of this disease is well described by Theodore C. Janeway in the *American Journal of the Medical Sciences*, March, 1909.

Before inaugurating any particular diet for the diabetic patient it is necessary to learn exactly his ability to metabolize properly carbohydrates and sugars. Janeway gives the usual caution of not making the diet too rigid for a patient whose ability to care for a carbohydrate-free diet without causing acidemia has not yet

been ascertained. However, he states that patients who can not at first stand a rigid diet without the appearance of diacetic and beta-oxybutyric acids in the urine may after a period of such diet be free from such symptoms of increased systemic acidity. It is not the purpose of this article to describe the various standard diets for mild, moderately severe, and severe cases of diabetes; for these the clinician is referred to Dr. Janeway's paper.

The patient is first put on a rigid diet with the addition of a known amount of white bread, three ounces at first, a day. The amount of sugar in the urine is noted and the amount of bread generally reduced, if diacetic acid or ammonia do not appear in the urine. It is thus soon found whether the patient has glycosuria on a carbohydrate-free diet. If glycosuria persists, the patient has the disease in a moderately severe form, and the proteids are then reduced in amount. If with carbohydrate-free and protein-restricted diet the patient still passes large amounts of sugar, then the disease is severe, and the diet that will keep up the patient's weight and cause the least excretion of sugar is the one that should be selected. When the patient's urine becomes clear of sugar on the restricted diet, it will often be found that later one or more of the carbohydrate foods in small amounts may be added, he having acquired a tolerance for them. It may, however, be found that a patient with mild diabetes may tolerate one starch better than another; this should be determined by investigation.

When too little carbohydrate is ingested, or too little burned in the system, the fatty acids are burned, and may form beta-oxybutyric acid, which is perhaps often the precursor of diacetic acid and acetone.

Whenever diacetic acid appears in the urine, which is the acid product whose presence it is the easiest to determine, ordinarily more carbohydrate food should be given, and that immediately, as there certainly is danger of acidemia and coma. Diacetic acid should be tested for on every examination of the urine, and is of as much importance, or more, to the patient, as is the amount of sugar in any given specimen. The simplest test for diacetic acid is a drop of a 5 per cent. ferric chlorid watery solution or a drop of a 5 per cent. ferric

alum watery solution in a test-tube one-third full of urine. A crimson color denotes the presence of diacetic acid; the more intense the color, the greater the amount of the acid.

The amount of fat that should be given to offset the carbohydrate removed from the diet must be determined for each individual patient by his ability to digest it without stomach or intestinal disturbance, and by the maintenance of his normal body weight. The more fatty meats may be advised in lieu of actual oil and fats. Janeway finds that a patient will digest more fats when alcohol is allowed him than when he does not take alcohol, and in fact finds that patients on a starch-free diet who must take large amounts of fat can not digest it without alcohol. Of course, alcohol also furnishes heat to the body.

Janeway speaks of the hunger days, or the days of low diet which has now come to be generally advised in diabetic patients, and the same is of advantage in patients with chronic nephritis. In these hunger days of diabetes various simple low nutritives may be given, as broths, some green vegetables, a little butter, a little coffee, and alcohol in some form. Sometimes skimmed milk is an advantageous diet for such a starvation day.

Sudden changes from much to very little carbohydrate in the food must not be made. The gradation should be gradual and not sudden, and there seems to be less likelihood of acidemia. If acidemia occurs Janeway thinks that it is not often successfully removed by allowing large amounts of carbohydrates, but certainly starches should be freely given if diacetic acid is found in the urine or other symptoms of acidemia are present. It is, however, much better so gradually and carefully to modify the diet with repeated examinations of the urine that acidemia is prevented rather than to combat it when it has occurred.

Consequently the diminution of the carbohydrates should be gradual. If by such diminution the sugar disappears entirely from the urine, it shows that the patient has not yet, at least, the real disease, and by care of his diet he may gradually develop a tolerance for sugars and starches and may, after months, return to a normal mixed diet.

## OUTLINING THE DIET

The first diet of a patient having a glycosuria should be rigidly proteid with the exception of a slice of bread three times a day. On this diet the patient's urine should be examined every few days not only for sugar but for diacetic acid. The test for this acid is quickly made by adding a few drops of a 5 per cent. solution of ferric ammonium sulphate to a test tube containing a small amount of the urine to be tested. If a crimson color develops, diacetic acid is present, and the more the acid the deeper the color. If diacetic acid is absent, acetone is generally also absent, and beta-oxybutyric acid can be considered not produced. The diet may then be further modified, after ten days or more, to two slices of bread a day, and if the urine remains free from diacetic acid, later to one slice of bread a day, and if the sugar entirely disappears and no diacetic acid is found, the diet may be continued thus rigid for some weeks, and then little by little the starches increased to the point of sugar tolerance, i. e., just under what will cause sugar to appear in the urine. On the other hand, if diacetic acid is found in the urine, carbohydrates should be given immediately and freely, as in no other way can coma be averted. During this dietetic treatment of diabetes plenty of water should be allowed the patient, although he should not pour down a glassful every time he is thirsty, but water should not be largely restricted, else the skin does not keep up its activity and various undesired skin complications occur. Some alkali should be given freely, as a gram (15 grains) of sodium bicarbonate, three times a day, after meals, or Vichy, or some other alkaline mineral water. In other words, the tendency of the system is to an overproduction of acid under the diet advised, and hence alkalies should be given to counteract such tendency.

To overcome the loss of weight which takes place under a nearly pure proteid diet, butter, cream, olive oil and perhaps cod-liver oil, should be freely administered unless acetone is found in the urine, when the fats should be reduced.

If sugar persists in the urine in spite of a rather rigid diet, it shows that it is made from proteid metabolism. Consequently it is no longer advisable or even

justifiable to withhold absolutely the starches and sugars, since under such a diet in true diabetes mellitus the patient is not only in danger of acidemia and coma, but his consumption of large amounts of proteids soon disturbs the functions of other organs. Also he emaciates, feels cold and is generally miserable. It is, therefore, best, having found that the disease or condition of diabetes mellitus is present, to allow him a little starch at each meal. He may have a potato at one meal, a little oatmeal at another, and a slice of bread at a third, and if he is cold and chilly, an occasional lump of cane sugar will do him no harm, and may do him some good. Osborne emphasizes the fact that a rigid diet in diabetes mellitus has caused many deaths and is dangerous, and that glucose in the urine of itself is not dangerous. A careful individualizing of each patient as to the diet that causes him to be less thirsty, that causes a diminished output of urine, that keeps his weight normal, that does not cause indigestion, and that keeps his skin in good condition constitutes the successful treatment of diabetes mellitus, and such a patient may live for years on such a carefully arranged diet.

#### MEDICINAL TREATMENT

Theoretically, the feeding of pancreas preparations should be of advantage, and it is true that diabetic patients may sometimes take care of more carbohydrates while taking pancreatic digestive ferments. However, it does not seem to modify or ameliorate the condition, and in most instances such treatment is absolutely worthless.

Suprarenal substance often seemed to Osborne to stimulate the organs concerned in sugar metabolism to do better work. In repeated instances he has found that the administration of suprarenal substance by the mouth has allowed patients to take more carbohydrates without sugar appearing in the urine in instances of dietetic glycosuria. He has also seen diabetic patients do better with suprarenal treatment than without it.

Of the various drugs lauded as of advantage in diabetes mellitus no one of them, though possibly temporarily of advantage, should be given any length of time or can be given any length of time in this long-



continued chronic disease without doing harm. This applies to salicylic acid, salol, antipyrin and all benzoate and guaiacolate combinations. Osborne does not believe that arsenic is ever justifiable in the treatment of diabetes mellitus.

There is no question that opium in any form, best perhaps in the form of its alkaloid codein, will diminish the output of sugar, but it is not the sugar output that is injuring the patient, and no patient can take a preparation of opium without sooner or later developing the opium habit and having all the disagreeable symptoms due to its continued use: constipation, loss of appetite, drying of the skin and nervous disturbances.

If coma is considered to be imminent, carbohydrates and alkalies should be given in large amount, and perhaps no alkali is better than the bicarbonate of sodium in two-gram doses (30 grains), in water, every hour for several doses. If the danger is past the diet should be liberal, with the free use of starches, until the urine is again free from diacetic acid. However, when coma is pending it is often impossible to prevent its occurrence, and the treatment of such a condition is the prevention, viz., the patient should receive, if seen in time, such a diet as to minimize the occurrence of coma.

If coma has developed, venesection may be done, with the withdrawal of considerable blood and the administration of bicarbonate of sodium solutions. Such treatment has often caused the awakening of the patient, but, unfortunately, relapse to fatal coma generally occurs.

|                             |     |    |       |
|-----------------------------|-----|----|-------|
| R.                          | gm. |    |       |
| Gland. suprarenal. sic..... | 10  | or | 3iiss |
| Fac capsulas 50.            |     |    |       |

Sig.: One capsule three times a day, after meals.

Or:

|                             |      |    |        |
|-----------------------------|------|----|--------|
| R.                          | gm.  |    |        |
| Gland. suprarenal. sic..... | 10   | or | 3iiss  |
| Ferri reducti .....         | 2 50 |    | gr. xl |
| M. et fac capsulas 50.      |      |    |        |

Sig.: One capsule three times a day, after meals.

In diabetic coma it is, perhaps, inadvisable to transfuse as strong solutions of bicarbonate of sodium as have been advised, and sodium carbonate seems unjusti-

fiable. After the withdrawal of a certain amount of blood in this condition of acidemia it is perhaps better to inject into the veins solutions that approximate normal blood plasma rather than either physiologic saline solution (i. e., 0.9 of 1 per cent. sodium chlorid solution) or saline solutions with a large amount of bicarbonate of sodium. The following is Ringer's solution, which may be used for this purpose:

| R.                       | gm.   |           |
|--------------------------|-------|-----------|
| Sodii chloridi .....     | 9     | gr. cxxxv |
| Calcii chloridi .....    | 24 or | gr. iv    |
| Potassii chloridi .....  | 42    | gr. viiss |
| Sodii bicarbonatis ..... | 20    | gr. iii   |
| M. et fac chartulam l.   |       |           |

Sig.: To be added to a quart (1,000 c.c.) of distilled, or at least boiled, water.

The above may be made into sterilized tablets and kept ready for use.

## CHRONIC ALCOHOLISM AND ITS TREATMENT

Before discussing this condition and the success and non-success of its treatment, we should separate the alcohol habit from dipsomania, briefly consider the hereditary tendency to the desire for alcohol, both the physical and mental craving for the stimulant or narcotic (for alcohol is taken for both purposes), and then discover, if possible, what drugs or treatment it is that cures the patients, who are cured, of this habit.

Chronic alcoholism may be defined as the condition caused by the continued use of alcohol. The patient may take it frequently to excess and become actually intoxicated or stupefied by it, but except possibly during the periods when acute indigestion has been caused by it, alcohol in some form is more or less continuously and daily taken. Chronic alcoholism may also be defined as a more or less frequent consumption of considerable amounts of alcohol, with short periods of intermittency. This later method of taking alcohol generally means excessive amounts.

## DIPSOMANIA AND THE ALCOHOL HABIT

On the other hand, dipsomania, while literally meaning a state of "frenzied thirst," is used to describe a

condition of periodic craving for alcohol, satisfied only by enormous amounts which for some hours or even days may be tolerated without complete intoxication. These periods of craving may be so long separated as to occur but a few times during a year, or but once a year, and sometimes even longer. They last from a few days to two or three weeks. In the meanwhile the patient may take no alcohol at all nor have any particular desire for it. The instigator of an attack may vary. Sometimes it is a taste of alcohol, or the observation of others drinking, and again it may occur as a nervous explosion similar in its lack of control to an epileptic attack, and not infrequently there is a prodromal period of depression, restlessness or anxiety. At such periods nothing but restraint will prevent the patient from taking enormous quantities of alcohol, and this is usually accompanied by a more or less complete lapse of physical and moral cleanliness. He can not reason, and is really suffering from a species of temporary insanity.

It is obvious, therefore, that the two conditions, chronic alcoholism and dipsomania, can not be treated in the same way, and should not even be considered as allied. One is a confirmed drug habit with all the pharmacologic actions, degenerations and deteriorations that go with the continuous ingestion of large amounts of alcohol, while the other is an unexplained disease or condition of the nervous system due to some periodic irritation creating a desire that experience or hereditary intuitive knowledge has taught can be satisfied with alcohol.

#### THE CRAVING ANALYZED

If we analyze the desire or craving of the alcohol habitué we find that there are at least three elements: 1, The action which the alcohol has on the throat and stomach; 2, the action on the circulation, and, 3, the action on the brain. Most patients who crave alcohol take it stronger and stronger and less and less diluted. In other words, we may say they are normally whisky and brandy drinkers; abnormally drinkers of one of the other strong liquors or alcohols. This desire for a burning, warming sensation in the throat, gullet and stomach is real, for so far as the throat is concerned it is often simulated by the urgent desire of cigarette inhalers

for another smoke, and part of the cigarette desire is certainly located in the throat. Also, it has been many times found that some irritant, biting substance like capsicum taken into the stomach has stopped this local craving for strong alcohol. It is quite possible, and perhaps probable, as seen in other organs of the body, that any periodic or intermittent stimulation that the organ receives soon causes it to have a periodic desire or habit for that stimulation, one desire, probably the **least one, for strong alcohol.**

The next most urgent desire for alcohol comes from the circulation. Those who have the alcohol habit get less cardiac stimulation or reflex stimulation out of alcohol than one who is not accustomed to it. Consequently, this is not the stimulation that they desire, but it is in all probability the dilatation of the peripheral blood vessels. In other words, if for any reason a patient used to a constantly repeated vasodilator as alcohol, is deprived of it or has the period of intermittency prolonged, has more or less contraction of the surface vessels; consequently more congestion of the internal organs and with these the brain. With this condition there is more or less restlessness, nervousness, and voluntary and involuntary muscular twitching, perhaps largely due to disturbances of nerve centers, but all helped by a non-intoxicating and by a non-narcotic dose of alcohol, and even sometimes by a small dose of alcohol, showing that it is not entirely the effect on the nerve centers that is desired, but the effect of equalizing the circulation, relieving the congestion of the internal organs, and often relieving the heart by dilating the peripheral blood vessels. The moment that such patients feel the peripheral flushing and warming from alcohol, that moment their nervous excitation and restlessness cease. The enormous effect of chronic alcoholism on the peripheral vessels is well understood and is often evidenced by the condition of the nose and face where the blood vessels are near the surface and readily show dilatation. It has also been noted that where there is craving for alcohol from this circulatory reason nitroglycerin can at times be substituted and the craving postponed or diminished. Consequently, many times the amount of alcohol that the patient takes

can be greatly reduced without uncontrollable craving if nitroglycerin is gradually substituted.

The third cause for the craving for alcohol proceeds from the central nervous system. Whether this is an actual craving of the brain cells for a stimulant or a narcotic (they having become used to such stimulation) much as the cry of the body cells for water creates both subjective and objective thirst, can not be determined. It is also perhaps difficult to decide whether this craving is a chemical need caused by an acquired habit of the brain cells, or whether it is an exaggerated psychologic desire first instigated by the physical craving above described and exaggerated by the individual who is suffering from the alcohol habit, the patient interpreting his psychologic craving as a real physical need. It is certainly difficult to decide how much of the craving for the drug is due to the need for that drug or to the enslaving psychologic need for the repetition of the confirmed habit; in other words, mental craving. It is also difficult to decide which the patient or the brain cells desire the most, stimulation or dulling of their sensibilities. Certain it is that patients craving alcohol or any other drug are in a condition of hyperexcitation, and the acquisition of the drug quiets them down to a normal condition. Consequently, in these instances of the confirmed drug habit we must consider that the action of the drug is to quiet; in other words, it is a narcotic to the central nervous system. On the other hand, many a patient while acquiring a drug habit gets such a nervous stimulation from it that he can mentally do much better work, and the drug thus acts in him as a stimulant. Again, this "stimulation" is really perhaps fallacious, as it is often hypersensibility or irritability, worries, frets or actual physical pain that prevents him from doing his best mental work. The narcotic effect, then, of the quieting drug puts him in a psychologic condition that enables him to do better mental work; hence, even in these instances the drug really acts as a narcotic.

### IS THE CRAVING SATISFIED?

Let us now for a moment consider the ability of alcohol to satisfy these many conditions described. In the first place, a little of it before meals, or with the meals, stimulates the appetite, and, if not in large amount,



aids digestion. A debilitated or tired-out man feels better and improves. Also, when there is poor peripheral circulation, cold extremities, and increased cerebral tension from too much blood pressure in the brain, alcohol will dilate the peripheral circulation and relieve this tension. An anemic, weak, overworked man or woman with breathless turns and periods of exhaustion may relieve that feeling with alcohol, the circulation starting up, the heart being slightly stimulated, and the condition becoming improved. If the patient has chronic pain or recurring pain which is not too acute, alcohol will stop it or dull it, both by its actual narcotic effect and by relieving the localized congestion by dilating the general circulation, and in this instance the patient feels better. In worries, frets and actual brain fag the stimulation from alcohol of a healthy circulation through the brain with a reduction of the increased blood pressure, with the slight mental indifference which alcohol causes, makes the condition of the patient seem to himself more to be tolerated. Also, there is the actual narcotic action of alcohol on the brain cells, slight in amount probably with small doses, more and more intense with larger doses, that becomes, perhaps, with the constant repetition of the habit, a temporary necessity at least for the cells to receive this quietus to stop this intermittent exaggerated irritability when deprived of alcohol.

Any one or all of the above reasons may become the cause or causes of the acquisition of the alcohol habit. The patient (and he has now become a patient) can not eat unless he has a drink; his circulation is not good unless he has an alcohol dilator; his brain does not work unless he has an alcohol sedative; his muscles do not work coordinately unless alcohol controls the nerve cell irritability. Suddenly deprive him of his alcohol and cerebral irritation reaches the point of delirium, the heart becomes rapid and irregular and the circulation fails.

#### PHYSIOLOGIC EFFECTS

Excessive amounts of alcohol for a longer or shorter period will do one of two things: either cause such a profound chemical effect on the brain cells and nervous centers as to produce coma and perhaps paresis; or, by accumulating in the blood, due to the inability of the

excretory organs to get rid of it, cause meningeal irritation and, therefore, delirium. It can thus be seen that a man with delirium tremens from excessive use of alcohol, when he has excreted by medical aid this excess, may again have delirium from the need of the cerebral cells for their narcotic. The treatment of the subsequent condition is to give the cerebral cells what they need in gradually diminishing amounts, or to substitute some other narcotic which will satisfy their desire. Of course, in the beginning of the treatment of delirium tremens while the excretion is being aided, it may be necessary from the violence of delirium to administer strong narcotics. This primary delirium is probably meningeal irritation. The secondary delirium is probably the same as seen in the sudden deprivation of an alcoholic of his alcohol, and is due to the irritation of the cerebral cells. This is similar to the nervous irritations seen in withdrawing the drug in any other drug habit.

The deduction from all this preamble is that in chronic alcoholism there is an intense physical desire to combat, yet also a psychologic element of nerve habit which can only be overcome by nervous control. In other words, as the alcoholic's physical desires are increased to the point of frenzy by his mental interpretation of such desires, so can no "cure" be successful without his mental belief that he is improving and can be cured. Hence, no cure has been or can be successful that does not treat the mind of the patient—that is not suggestive. There is probably no lauded or asserted treatment to cure the condition of chronic alcoholism that has not had some successes. There is also no treatment that has not and will not have relapses. It is probable that just as many patients have been cured by the simple signing of the pledge as are cured by any other treatment. This certainly was true in the past. In the present very practical age, when a man must see something done, or have something done, or do something tangible before he will exert his mental powers to control his habit, the mere signing of pledges is less successful. The man must take some treatment that has a name to it, or go to some institution and have something done, or do something that makes more frequent impressions on his mind, i. e., to suggest repeatedly to him that he is being cured.

## NO SPECIFIC

These assertions, then, presuppose what seems to be the absolute fact, that there is no known specific for the treatment of chronic alcoholism. In other words, there is no known drug or any combination of drugs that will cure alcoholism. From time immemorial it has always been known and always been recognized that the taking of a drug or preparation, the ingredients of which the patient did not know, caused more mental co-operation of the patient than the taking of a drug which he did know; consequently the ability of many lauded nostrums to cure the alcohol habit. And even the physician administering a nostrum owned by some firm or corporation carries with it the mental helpfulness of the physician to stimulate the mental helpfulness of the patient. Also, the individuality of the physician who administers or conducts the treatment, or the individuality of the minister who compels a man to sign the pledge is perhaps the most important factor in the cure. As just stated, however, this individuality or the administration of something to the patient the ingredients of which he does not know, or the application of some physical treatment to the patient must be repeated frequently to obtain the best suggestive results. Institution treatment of alcoholics is the only treatment that can succeed when the patient's mental ability has so deteriorated that the stimulation of such suggestion and the stimulus of such individuality can not control him. There is no drug and no treatment known that can give him that mental stimulus if he has not the ability to evolve it. It is many times perfectly true that the ordinary mental stimulation that a physician is able to give a patient by any method which he may inaugurate will not touch the psychologic keynote in the individual which can be touched and often later is touched by some pseudopsychopathic treatment. Therefore, Christian science or any other mental suggestive treatment may in individual cases so start healthy cellular vibrations in the brain of the chronic alcoholic that he controls his desires and becomes cured of his habit.

## TREATMENT

The advantage of doing something physical has been aided by the use of the hypodermic syringe, so that some

institutions administer drugs frequently by the hypodermic method, or even may often give pure water hypodermically with the suggestion that the patient will be improved by it. Various electrical, massage, exercise and eliminative treatments all, of course, have their use in improving the physical condition of the patient and, therefore, his mental ability to fight his habit, and are all more or less taken advantage of in the institutional treatment of the alcohol habit.

To come down to a concrete treatment. The physician must in the first place honestly decide if he has the mental forcefulness to take charge of patients suffering from the alcohol habit, and out of a given number of physicians but a small percentage will find that they possess that power. In other words, few have such a forcefulness as will carry mentally one or more patients suffering from the alcohol habit for a continued length of time. After this each patient should be individualized, and it is rare that any one patient can be treated like any other patient in this as in any other condition. If the patient's surroundings and his mental ability to control himself with the physician's help are far below par, nothing but institutional treatment will be successful. Whether or not the alcohol shall be withdrawn rapidly or slowly depends on the physical condition and on the intensity of the nervous desire. Whether capsicum or some other irritant shall be given before meals for digestive stimulation (remembering that all tinctures contain alcohol), or whether nitroglycerin as a dilator will prevent, in the individual patient, the circulatory craving, or whether strychnin will steady or overstimulate irritable nerves and nerve cells, must all be decided by the physician who studies the individual patient. Whether bromids or chloral, or a temporary coal-tar cerebral sedative is advisable must also be decided by the individual physician for the individual patient. But whatever medicinal treatment is instituted, physical treatment should also be inaugurated, and, most important of all, as just stated, is the frequent mental aid given by the physician to the patient, and perhaps in no better manner furthered than by his personal administration to the patient of the drugs needed, or the placebos instituted.



## ALCOHOLIC CEREBRAL EDEMA (WET-BRAIN)

Dr. Charles K. Stillman, New York (*New York Medical Journal*, Jan. 25, 1908), discusses this condition. He believes that the stupor following alcoholic delirium is due to cerebral edema, but admits that many serous effusions are found in the meninges on the postmortem table in patients who have shown no cerebral symptoms during their illness. The wet-brain caused by alcohol seems to be a "transudate from the piaarachnoid and occasionally from the small blood vessels penetrating the brain substance." He finds the stupor due to alcohol almost invariably preceded by delirium. From a study of the alcoholic patients of Bellevue Hospital, during the year from Sept. 1, 1905, to Sept. 1, 1906, who have had alcoholic wet-brain or alcoholic stupor, he has found the mortality to be as high as 81 per cent.

Stillman speaks of having seen many instances of transitory wet-brain in pneumonia patients, the symptoms sometimes being so short-lived as to have escaped notice.

It certainly is not uncommon to see, on the one hand, cerebral excitation from the medicinal overuse of alcohol in acute diseases, as pneumonia or typhoid fever, and also, on the other hand, symptoms of wet-brain from its misuse in these diseases.

While there is no rule as to the time of onset of stupor after delirium tremens or in pneumonia complicated with delirium tremens, Stillman finds the symptoms of wet-brain manifest themselves about the third or fourth day. The early symptoms of this condition are "restlessness, marked altered facial expression, and gray pallor." During the alcoholic excitation the pupils are likely to be contracted, and may be even contracted to a pin point. As the cerebral transudate occurs the pupils dilate and generally remain so, although they will usually react to light, though sluggishly. The pulse is feeble, may be rapid or may be rather slow, and shows variations from time to time. The temperature during this alcoholic depression is low and there may be muttering and often a picking at the bedclothes. The condition is more likely to be a stupor than a coma.

Stillman would head off this alcoholic wet-brain by forced feeding. He gives enormous amounts of food, including eggs, eggnog and broths, together with power-



ful stimulation, when the pulse flags and the vital processes get low. He says that the patients do not react to normal stimulating doses, and it is surprising how much stimulation they can take care of with apparent benefit. He advises:

| R.                         | gm. or c.c. |           |
|----------------------------|-------------|-----------|
| Strychninæ sulphatis ..... | 01          | gr. 1/6   |
| Camphoræ .....             | 1           | or gr. xv |
| Spiritus frumenti .....    | ad 100      | ℥iiss     |

M. et Sig.: A tablespoonful every three hours, if needed.

He also finds the following useful:

| R.                     | gm. |         |
|------------------------|-----|---------|
| Caffeinæ citratæ ..... | 6   | or ʒiss |

Fac capsulas 20 (dry).

Sig.: One capsule every six hours.

Or:

| R.                                     | gm. |         |
|--|-----|---------|
| Caffeinæ sodio-benzoatis (N. F.) ..... | 6   | or ʒiss |

Fac capsulas 20 (dry).

Sig.: One capsule every six hours.

He finds that spinal puncture is of benefit for a short time if the cerebral pressure has produced stupor and that the relief from such puncture will last a day or so.

Patients with wet-brain from alcohol should probably not receive alcohol. Also, when there is any such condition of the brain, absorption from the stomach is uncertain, and of course enormous doses of any stimulant so administered may be tolerated. It should be distinctly understood that when there is severe cerebral disturbance sufficient to cause stupor or coma, the stomach for the time being becomes practically outside of the body, and it would be just as efficacious to bathe the body with the medicament as to put it into the stomach. On the other hand, if suddenly the condition of the circulation improves and the cerebral pressure is relieved, dangerous absorption from drugs in the stomach may occur. Consequently, the medicinal treatment of coma or stupor should be hypodermatic or intravenous.

For the above condition no treatment is perhaps better than the intramuscular injection of an aseptic ergot, a syringeful of the pure fluid extract or the active principle, repeated in three hours, for two or three doses, and then once in six hours, if needed. The hypodermatic administration of strychnin sulphate or nitrate

in doses of 1/30 of a grain, is a necessity for cardiac and respiratory stimulation. The advantages of a hypodermic injection of a saturated solution of camphor in pure olive oil can not be questioned. It is a quick and efficient cardiac and cerebral stimulant, and if aseptic precautions are taken, will never produce an abscess. Caffein, best given in the form of black coffee, and administered by the stomach, is certainly valuable in all cases of cerebral depression when there is no excitation

---

## TOBACCO

In this age of the ever-increasing frequency of high blood tension, arteriosclerosis and cardiac weakness, the action of tobacco is becoming more and more a topic of importance. While it may be true that the number of non-smokers among men is increasing, it is also true that the number of men, young men, and even boys, who smoke excessively is increasing.

In investigating the exact pharmacologic action of tobacco, while we must seriously and carefully consider the scientific findings of laboratory investigators, it becomes evident that these findings do not express the whole truth of the action of tobacco on the individual addicted to its over-use.

The only active constituent of tobacco seems to be the alkaloid nicotin, and this alkaloid acts principally on the nervous and circulatory system. In concentrated form it is one of the most quickly acting poisons, and may produce death in less than a minute by causing immediate respiratory failure, the heart beating for some time after respiration ceases. In less concentrated doses the symptoms are severe nausea, vomiting and purging, with profuse salivation, sweating and a gradually failing heart and respiration.

### ACTION OF NICOTIN

When nicotin is injected intravenously or subcutaneously there is first a rise in the blood pressure, which is probably due to an irritant action on the blood vessel walls. This, however, is soon followed by a lowering of blood pressure, due to the disturbing influence on the heart. The action on the heart varies with dif-

ferent doses, and often from minute to minute. At first there seems to be a decided inhibitory action, by a stimulation of the pneumogastric nerves. If the dose is sufficient to paralyze the ganglia of the pneumogastric nerves the heart becomes rapid, and soon the heart muscle itself is depressed and later paralyzed. Most of the secretions of the body are increased, especially that of the salivary and sweat glands.

Nicotin is a stimulant to peristalsis, both of the intestines and stomach. Nausea and vomiting, though partially due to excessive stomach contractions, are also doubtless due to the irritant or depressant action on the vomiting center in the medulla.

Cushny says that nicotin first stimulates and later paralyzes all of the sympathetic ganglia. If this is true of large doses, small doses taken in constantly (as by smoking) by young boys must profoundly affect growth and nutrition.

The nervous twitchings and fibrillary contractions of muscles seems to be due to an action on the central nervous system. Nicotin does not seem to be a stimulant to the higher centers of the brain, except possibly during the actual act of smoking or puffing at a cigar or pipe. The almost immediate action is a depressant and quieting one on the central nervous system: in other words, it acts as a narcotic. While large doses of nicotin will cause dilatation of the pupils, small doses (smoking frequently repeated) will cause the pupils, in the tobacco *habitué*, to be contracted.

While nicotin is mostly excreted by the kidneys, it is also largely excreted by the saliva, and probably slightly by the perspiration.

#### THE HABIT

Like any other narcotic drug, a tolerance for tobacco is soon acquired, the desire for it soon develops, and the tobacco habit is easily formed.

It seems positively physiologically demonstrated that when tobacco is smoked a certain amount of nicotin is absorbed, as, whether the effect is that of acute poisoning, as in a novice, or that of chronic poisoning in the over-user of tobacco, the symptoms and disturbances are those of nicotin. The amount of nicotin that will be absorbed from each "smoke" depends on whether it is

a pipe, cigar or cigarette that is smoked, and whether or not the smoke is inhaled.

What it is that causes the tobacco-smoking habit is not positively demonstrable, and perhaps the habit can not be attributed to any one particular thing. The desire for a smoke is probably a combination of the narcotic, quieting effect of the nicotin; the quieting effect of the rhythmical muscular activity of puffing; the desire for the periodic irritant stimulation of the throat, and perhaps larynx; perhaps the psychic effect of watching the curling smoke, and the human feeling of sociability in smoking with others. There seems to be no doubt that cigarette smokers who inhale have the desire intensified by the irritation of the throat, and such smokers are not satisfied with any other method of using tobacco, even if strong cigars are substituted for the weak tobacco cigarettes. Consequently, the nicotin action comprises but a portion of their intense desire, the cure of which is the hardest of the tobacco habits. It is also positively true that the smoker who inhales (and inhaling occurs far and away most frequently among cigarette smokers) is the one who absorbs the most nicotin, and is the one in most danger of chronic poisoning.

#### TOBACCO POISONING

The intangible signs of chronic tobacco poisoning are in boys, impaired physical growth and impaired respiratory ability, and in older men, a slowly developing arteriosclerosis. The tangible symptoms and signs of the over-use of tobacco are excessive nervous irritability and excitability as shown by nervous twitchings, fibrillary contractions, increased nerve reflexes, sleeplessness, palpitation, cardiac pains, loss of appetite, digestive disturbances and chronic inflammation of the throat and larynx.

To begin with, the simplest of these conditions, the chronic pharyngitis, lingual tonsil irritations, lingual tonsil cough, and chronic congestion of the larynx, and laryngitis, are conditions frequently seen and generally readily cured by the withdrawal of tobacco and the proper local treatment.

Whether the loss of appetite and dyspepsia are due to the impairment of the saliva which in over-smokers is loaded with nicotin and probably other tobacco extrac-

tives, or to excessive stomach irritability, or to impaired circulation (which is generally concomitant with digestive disturbances from this cause) can not be proved, but probably all are factors in causing the impaired functioning of the stomach. In this condition it can generally be promised that if the tobacco is stopped and gentle tonic treatment given the appetite will return, the digestion will improve, and the patient will put on weight.

The most frequent disturbance for which the patient who over-uses tobacco comes to the physician is cardiac disturbance, and generally he has recognized the cause, and has attempted to stop the excessive use of tobacco. The heart is found irritable, palpitating with the least exertion, and sometimes without excuse, occasionally sharp, stinging pains referred to the cardiac region occur, the patient is breathless on slight exertion, and arrives at the top of a flight of stairs with the short, dry, catchy cough so typical of cardiac weakness. Examination of the heart often shows it slightly enlarged, and there may be a mitral systolic murmur, showing an insufficiency of the mitral valve. Such a condition of the heart from tobacco is found occasionally, while an irritable heart from tobacco is of frequent occurrence. Such a heart will generally recover entirely after the withdrawal of tobacco, with physiologic rest (as rising slowly and walking slowly, avoiding all haste, refusing to rush for cars, abstaining from severe muscular exertion) and the administration of small doses of digitalis or strophanthus. Of course during the treatment of such a heart alcohol should be entirely avoided. Entire recovery of the "tobacco heart," if the patient has no other organic lesion, should be expected in from three to six months.

When the heart is seriously affected by nicotin other symptoms are frequently in evidence, such as a small amount of tremor, exaggerated reflexes, and a tendency to cold hands and feet, with excessive sweating, especially of the hands. Such a condition of the hands and feet is particularly noticeable in young men and boys who are over-smoking, and will generally disappear on the stoppage of tobacco and the administration of ordinary doses of strychnin.



Occasionally the first notification of excessive use of tobacco is an impairment of vision. This is of rather rare occurrence, although the tendency to small, contracted pupils is of frequent occurrence. Generally the vision improves after stopping the tobacco.

#### STIMULANT OR NARCOTIC?

Much discussion has taken place as to whether the tobacco user gets cerebral stimulation or cerebral quietude from his smoke. As the tobacco user will generally get nervous irritability and probably cerebral irritability if he suddenly stops smoking, and becomes calm and quiet as soon as he takes his smoke, it hardly seems that the nicotin could ever be a cerebral stimulant. Although the rhythmical puffing at the cigar or pipe may produce cerebral stimulation by possibly increasing the blood flow in the brain, and though there may be some cerebral stimulation from the possible slight increase in blood tension due to the act of smoking and the absorption of nicotin, still the action of tobacco as a whole must be put down as sedative and narcotic. The nervousness is quieted, the cerebral irritation becomes diminished, calmness takes its place, and the man thinks and acts calmly, logically and with less haste. This, of course, applies to the man who takes his "smoke" regularly and has not developed chronic tobacco poisoning. The circulatory and nervous depressant effects which occur when the novice smokes his first cigar can not be considered as at all symmetrical with the symptoms produced by a cigar smoked by one who has become tolerant to tobacco. The tobacco user without tobacco not only develops cerebral irritation, as shown by irritability and nervousness, but also has an increased blood pressure from this same nervous tension. In his case certainly, and probably in most instances, though the primary muscular effort of puffing at the cigar may increase the blood pressure, soon, secondarily, there is a diminished blood pressure, the irritable heart is quieted, the nervous system receives its desired narcotic, and the man feels comfortable and contented. Under such conditions he certainly will do better mental work than without his cigar unless he has entirely broken himself from the habit, and his system does not need or expect the narcotic influence of tobacco.

It seems to be a mistake to have believed that the smoke in a tobacco atmosphere does not contain nicotin, because if patients, who show signs of the over-use of tobacco and who have diminished or even stopped its use, remain for several hours in a room filled with tobacco smoke, or ride for hours in smoking cars, they will again show signs of nicotin poisoning. In other words, a man may smoke one or two cigars a day in the open air or in his own home with impunity, but the same amount of tobacco smoked in smoking cars will often produce symptoms of poisoning.

#### WITHDRAWAL IN SICKNESS

It has not been seriously enough considered that an habitual tobacco user, who has developed an acute sickness or has been subjected to an operation, during convalescence may suffer from nervous symptoms and circulatory phenomena that are due to the withdrawal of his habitual narotic. It can not be stated offhand that even so simple a narotic as tobacco can suddenly be withheld from a system that is undergoing other serious strain without causing serious symptoms. If a heart has become used to the quieting effects of nicotin on its nervous mechanism, and if some of the vital brain centers, especially in the medulla, have become used to this same narcotic, it is probable that serious symptoms may be prevented and a quieted nervous system and better heart action be produced by allowing such a patient to have a more or less frequent "smoke," depending on his previous habit. It is also possible, as so well recognized in the users of opium or morphin, that tobacco to these *habitués*, while not a stimulant to mental activity or causing a patient to be mentally more acute, may still be a positive stimulant to the vital brain centers.

A positive demonstration of such need for tobacco in the convalescence of sickness is well shown by several cases reported by Dr. L. Bolton Bangs, New York, in the *Medical Record*, March 14, 1908.

To draw a moral from the above would be to urge the prohibition of the sale of cigarettes to young growing boys; for physicians to discountenance positively preparatory schools that allow the youth of America to develop or continue the cigarette habit; to teach older boys and young men the physiologic disability that large,

and certainly excessive, amounts of tobacco can produce; and to urge, after the young man has acquired his growth, such use of tobacco, if he desires to use it at all, as will be less than enough to cause any of the well-known symptoms, which the man himself can be taught to recognize as these symptoms of over-use of tobacco. The amount that each individual should or may smoke is an entirely individual problem. There is not and never can be a rule as to how much is excessive. One cigar a day may be as serious for one man as are six cigars a day for another.

It is impossible to state how frequently deaths are caused by the over-use of tobacco. Certain it is that not infrequently young boys and young men, generally cigarette users, get into such mental conditions as to become irresponsible criminally, mentally worthless, and even insane. It certainly seems recognizable that serious heart weakness occurs frequently in acute disease, or after operations, in those who use tobacco excessively. Certainly great care should be exercised to use no drug that will cause cardiac depression in such patients and their hearts should be more carefully watched than the heart of an individual who does not smoke. It is quite possible that even during the acute processes a chronic tobacco user should be allowed an occasional short "smoke."

In breaking off from the tobacco habit the question is, shall the patient stop abruptly or gradually? This is best determined by the man, who knows which is the best method for himself. Sometimes bromids help to diminish the restlessness and nervousness, sometimes strychnin is needed, and generally laxatives are indicated. Plenty of fresh out-door air will generally aid such patients in ridding themselves of the habit.

---

## ANEMIA

Dr. Curran Pope, Louisville, Ky., discusses the treatment of this condition in the *New York Medical Journal*, Nov. 2, 1907. He enumerates the well-known causes of anemia and emphasizes the relation of chronic gastrointestinal and hepatic disease to this condition of the blood. He believes that many times anemia is due

to an absence of sunlight and daylight, and finds that those who work indoors all day in the winter and go home after dark, thus getting practically no sunlight and but poor daylight, are prone to anemia, and especially to a diminution of the hemoglobin.

In combating the anemia, of greatest importance is the improvement of the hygienic condition of the patient, fresh air, sunlight, moderate exercise, and deep inhalation to increase the absorption of oxygen and the carbon dioxid elimination. The diet should be based on the intestinal condition, being the most nutritious and of the kind that can best be digested. The constipation should, of course, be combated, and most important of all, gastrointestinal fermentation and intoxication, as evidenced by the finding of indican and sulphates in the urine, should be prevented. Pope finds this intestinal fermentation best combated by the feeding of sour milk. The milk is first sterilized and then soured by means of the lactic acid bacillus. [Tablets for souring milk artificially are now on the market.] This sour milk is nutritious, easily digested, and perhaps one of "the best of natural antiseptics."

#### GENERAL THERAPEUTIC MEASURES

Pope emphasizes the advantages of various hydrotherapeutic measures, electrotherapy, electric light baths, massage and vibratory treatments. He also finds that he can cure anemia without the administration of iron and arsenic. There can be no question of the advantages of fresh air and sunlight to patients suffering from anemia, and there could be no better treatment than the open-air sanatorium treatment advocated for tuberculosis for these anemic patients. The next most important thing is the prevention of the absorption of toxins from the intestine, and many a patient with anemia has improved on saline cathartics. It is certainly better to give a diet and such laxatives as are needed to prevent intestinal fermentation than to attempt to combat such fermentation with so-called bowel antiseptics. Patients who can not take the rest, sunshine and fresh-air cure do improve with iron, and they will improve as much with an inorganic iron as with any organic iron. The mistake has been that too much iron is administered, hence some peptonate or albuminate or other organic iron has been said to be better tol-

erated. The mistake has been that the dose of the inorganic iron was not small enough. Very little is needed to satisfy the economy for iron. A small dose of the tincture of the chlorid of iron, or the reduced iron in tablet or capsule, or the pill of the carbonate of iron (Blaud), or the saccharated oxid of iron present a variety of inorganic irons sufficient to meet any indication. The multitude of other iron preparations is not needed and is superfluous.

Occasionally arsenic seems to be of value in anemia, but certainly it should be given in small doses only. Large doses do harm. Manganese has sometimes seemed to act as well as iron in anemia, but certainly it could act no better.

In chlorosis, so generally accompanied as it is with amenorrhea, the best treatment is thyroid substance in small doses, as:

R. gm.  
Glandularum thyroidearum siccarum..... 3| or gr. xlv  
Fac capsulas 20 (dry).

Sig.: One capsule three times a day, after meals.

Or:

R. gm.  
Glandularum thyroidearum siccarum..... 2|  
Ferri reducti ..... 2| or āā, gr. xxx  
M. et fac capsulas 20 (dry).

Sig.: One capsule, three times a day, after meals.

Iron may be given as follows:

R. c.c.  
Tincturæ ferri chloridi..... 5| flʒiss  
Syrupi acidi citrici..... 25| or flʒi  
Aquæ ..... ad 100| ad flʒiv

M. et Sig.: A teaspoonful, in water, three times a day, after meals.

Or:

R. gm.  
Ferri reducti ..... 2| or gr. xxx  
Fac capsulas 20 (dry).

Sig.: One capsule, three times a day, after meals.

Or:

R. gm.  
Tabletas ferri reducti, āā..... |065 or gr. i  
No. 20.

Sig.: One tablet, three times a day, after meals.

Or:



R.

Pilulas ferri carbonatis. (Blaud) No. 20.

Sig.: One pill, three times a day, after meals.

Or:

R.

|                            |      |    |                   |
|----------------------------|------|----|-------------------|
|                            | gm.  |    |                   |
| Strychninæ sulphatis ..... | 0.02 | or | gr. $\frac{1}{3}$ |
| Ferri reducti .....        | 1    |    | gr. xv            |
| Quininæ sulphatis .....    | 2    |    | gr. xxx           |

M. et fac capsulas 20 (dry).

Sig.: One capsule, three times a day, after meals.

Or:

R.

|                            |      |    |                   |
|----------------------------|------|----|-------------------|
|                            | gm.  |    |                   |
| Arseni trioxidi .....      | 0.02 | or | gr. $\frac{1}{3}$ |
| Strychninæ sulphatis ..... | 0.02 |    | gr. xv            |
| Ferri reducti .....        | 1    |    | gr. xxx           |

M. et fac capsulas 20 (dry).

Sig.: One capsule, three times a day, after meals.

Or:

R.

|                             |      |    |                   |
|-----------------------------|------|----|-------------------|
|                             | gm.  |    |                   |
| Strychninæ sulphatis .....  | 0.04 | or | gr. $\frac{2}{3}$ |
| Quininæ sulphatis .....     | 1    |    | gr. xv            |
| Massæ ferri carbonatis..... | 2    |    | gr. xxx           |

M. et fac pilulas 20.

Sig.: One pill three times a day, after meals.

Or:

R.

|                     |     |    |        |
|---------------------|-----|----|--------|
|                     | gm. |    |        |
| Ferri reducti ..... | 1   | or | gr. xv |
| Salicini .....      | 10  |    | 3iiss  |

M. et fac konseal. 20.

Sig.: One wafer three times a day, before meals.

If it is deemed advisable to use manganese, it may be given as follows:

R.

|                                  |     |    |         |
|----------------------------------|-----|----|---------|
|                                  | gm. |    |         |
| Mangani dioxidi præcipitati..... | 3   | or | gr. xlv |
| Ferri reducti .....              | 2   |    | gr. xxx |

M. et fac capsulas 20 (dry).

Sig.: One capsule, three times daily, after meals.

### WARM WATER IN SCARLET FEVER

The advantages of hot, or at least warm, water bathing in scarlet fever is well set forth by Dr. H. W. Rover, of Denver, in *Colorado Medicine*, July, 1908. He premises the discussion of the hot water treatment of this disease by the statement that "what the cold bath is to typhoid

fever, the hot bath is to scarlet fever." The advantages of hot baths in scarlet fever are that they hasten the completion of the eruption; quiet restlessness and prevent cerebral excitation; dilate the peripheral blood vessels and increase heat radiation and diaphoresis, which is often absent in this disease; tend to prevent itching; relieve the congestion of the kidneys due to dry skin; make desquamation more rapid; and tend to remove, daily, the dry epidermis that, if not prevented by oily applications, will fly about and supposedly spread the contagion.

With a warm room and a bathroom handy there is no question that hot or warm water bathing in scarlet fever is an advance in the treatment of that disease. If a hot bath is not available, hot water sponging should be done daily. If, during the desquamative stage, much itching or irritation is present, or the skin is dry, rubbing in clean olive oil or some clean, diluted wool fat preparation is advisable.

While the patient may be sponged finally before he leaves the sickroom with some mild antiseptic solution, there should be no daily application of germicide, lest absorption and poisoning take place.

While there is some doubt whether the epidermal scales of scarlatina are the cause of the spread of the disease, until there is proof that such is not a means of propagation the patient should be isolated until scaling is complete, and, as Rover has emphasized, hot baths and inunctions of oil will hasten the completion of the desquamation.

---

## SYPHILIS

Dr. James Pedersen, New York, in the *Vermont Medical Monthly*, May, 1908, discusses the diagnosis and treatment of this disease. He divides the disease, as the patient first presents himself to the physician, into four groups: "In the first there is a sore, in the second a sore and an eruption, in the third either an eruption or a sore throat or both, and in the fourth there is nothing visible and, perhaps, nothing palpable. These groups are arranged in the order of their relative frequency of occurrence." Unfortunately for both physi-

cian and patient, "the typical Hunterian chancre is only found in the minority of cases." In the majority of patients the ulceration, chancre, or new growth, presents many non-typical signs. Pedersen believes that "every lesion on or about the genitals, occurring within seventy days after an opportunity for infection, may be a point of syphilitic inoculation." He also believes that "every genital ulcer, however simple or however serious, should be regarded as the possible site of a mixed infection." Such suspicious ulcers should not be cauterized unless the ulceration tends to spread rapidly or to erode. In doubtful cases the physician should express the probabilities to the patient, but mercurial treatment should be withheld "until the secretion from the ulcer has shown the *Spirochæta pallida* or until enlarged inguinal glands, eruption or mucous patches in the throat have appeared." Pedersen does not believe that too much value should be placed "on the enlargement of the epitrochlear and axillary glands, especially in patients doing work that exposes the hands to frequent trauma."

#### EARLY TREATMENT

While many writers on this subject believe that specific treatment should not be begun until the first eruption appears, Pedersen thinks that a doubtful case may be diagnosed and the treatment begun "when such symptoms as lassitude, headache, fever and nocturnal bone pain occur in such suspected patients." Such patients may have albuminuria and enlarged spleen, he states. It would seem generally advisable, however, in order to obtain the continued cooperation of the patient for the number of years that he must be treated, that, except in rare instances, specific treatment should not be begun until the first secondary symptoms are in evidence.

Pedersen emphasizes the great importance of general hygienic treatment in conjunction with the administration of the necessary drugs. In doubtful cases he would begin the preparation of the patient, if possible, by giving a vacation in which he spends his whole energies in improving his general health. Such a preparation of the patient, unfortunately, would ordinarily be difficult to institute. It should be emphasized, however, that, as Pedersen states, a nutritious, simple diet, total ab-

stinence from alcohol and tobacco, a proper amount of fresh air and a proper amount of physical exercise are essential to the tolerance of the disease and the mercury.

Cauterization of the initial sore should be avoided, if possible, until the diagnosis has been established. Also no mercurial dressings should be applied until such a diagnosis has been made. Ordinarily cleanliness and protection and other antiseptics than mercury may be used. If the diagnosis is positive, cauterization may be done, but not frequently, and some mild mercurial dressing may then be applied. But whatever the dressing, it should not be irritant lest it cause inflammation of the surrounding tissues. If the chancre is syphilitic, when it is deemed best to administer mercury internally, it will rapidly heal without local mercurial applications.

### CARE OF THE MOUTH

During the mercurial treatment the patient should drink plenty of water to promote the activity of all the organs of excretion. The mercury will probably soon cause sufficient or even perhaps too frequent movements of the bowels. The care of the mouth, teeth and gums is important, and the patient can not be too carefully instructed in this matter. Any alkaline wash, or, if there are any erosions, peroxid of hydrogen applications, or a mouth wash of alcohol one part and water three parts, or a potassium chlorate mouth wash, and occasionally tannic acid washes and gargles are useful. Ulcerations in the mouth and throat will often heal rapidly after one or two applications of a 25 per cent. solution of nitrate of silver. Without ulceration in the mouth and throat the mucous membrane may be kept healthy by a thorough cleaning of the teeth two or three times daily, and the cleansing of the mouth and throat with alkaline solutions as represented by the following:

|                                       |         |       |
|---------------------------------------|---------|-------|
| R.                                    | c.c.    |       |
| Liquoris antiseptici alkalini (N. F.) | ....500 | or Oi |

Sig.: Dilute with equal part of warm water and use three times daily as a mouth wash.

If there is simply a general redness and soreness of the mouth and gums, there is no application more soothing than potassium chlorate solution, as:

| R.   | gm. or c.c. |       |
|--|-------------|-------|
| Potassii chloratis .....   | 25          | or ʒi |
| Aquæ .....   | 500         | Oi    |
| M. et sig.: Use, undiluted, as a mouth wash or gargle, two or three times a day. |             |       |

If there is any purulent condition of the mouth or gums, or any cavities of the teeth that can not be attended to immediately by a dentist (who should be told what disease the patient has for his own protection and that of the rest of his clientele), a dilute solution of peroxid of hydrogen makes the best cleansing mouth wash, as:

| R.  | c.c. |        |
|---|------|--------|
| Aquæ hydrogenii dioxidi.....  | 250  | or Oss |
| Sig.: Dilute with four parts of warm water and use, three times daily, as a mouth wash. |      |        |

Directly after using a peroxid solution the mouth should be cleansed with plain water or, better, an alkaline solution. as the above.

If it is thought best to use a tannic acid solution to cause a flabby mucous membrane to become more healthy, it may be used as follows:

| R.  | gm. or c.c. |           |
|---|-------------|-----------|
| Acidi tannici .....   | 5           | ad flʒvi  |
| M. et sig.: Use, undiluted, as a mouth wash or gargle, three or four times a day. |             |           |
| Glycerini .....   | 10          | or flʒiii |
| Aquæ, ad .....  | 200         | ʒiiss     |

The patient should be thoroughly instructed as to the danger of his infecting others and the manner of such infection, as by napkins, towels, drinking cups, spoons, forks, or kissing. Such instructions should be most explicitly given if there are mucous patches in the throat.

#### MERCURY AND THE IODIDS

There is as yet no medicinal treatment whose success is comparable to that of mercury and an iodid. Probably the most frequent forms of mercury used internally are the protiodid (the green or yellow iodid), the biniodid (the red iodid), the bichlorid (corrosive sublimate), calomel, and blue mass, and the frequency of their use is probably in the order named. For inunction the blue ointment or the oleate may be used, and for hypodermatic administration Pedersen says that four forms of



mercury are available: the bichlorid, the salicylate, the biniodid, and the mild chlorid (calomel). Mercurial fumigation should rarely, if ever, be done, as the amount that may be absorbed is beyond regulation and sufficient may be taken into the system to cause serious symptoms.

#### HYPODERMATIC ADMINISTRATION

Hypodermatic administration is used when the disease must be gotten under immediate control, when the lesions are likely to become serious, as eroding ulcerations with perhaps palate perforations, or nasal perforations, or symptoms showing that gummata are forming in the central nervous system or elsewhere, or when inunctions are inadequate and medication by the mouth causes uncontrollable gastrointestinal disturbances. In rare instances hypodermatic medication may be used when it is necessary that the patient's family should not know that he is receiving medication. Some physicians advocate the hypodermatic administration of mercury in every case of syphilis; the majority of physicians, however, have not adopted it. The advantages are that the patient comes more quickly under the influence of the drug, and one injection gives sufficient mercury for absorption to last a number of days (from five to seven), this infrequency when the symptoms are not serious. The disadvantage, and the reason that it is generally not selected by physicians, is the discomfort that it almost invariably causes. An all-glass syringe with a needle at least two inches long is used and the injection is generally made deeply into the gluteal muscles. Peder-sen recommends as preferable for this purpose a bichlorid of mercury solution of the strength of  $\frac{1}{8}$  of a grain in 5 minims. This strength allows the physician to run up the dose from 5 to 10 minims, the capacity of an ordinary hypodermic syringe, allowing sufficient dilution. Hypodermic tablets of corrosive sublimate may be dissolved in sterile water at the time of the injection, or, as recommended, the following solution may be used:

| R.   | gm. or c.c. |         |
|--|-------------|---------|
| Hydrargyri chloridi corrosivi.....                         | 625         | gr. xii |
| Aquæ destillatæ .....                                      | 25          | or ʒi   |
| M. et sig.: Corrosive sublimate for hypodermic use.        |             |         |
| [Each .30 c.c. = .008 gm.] [Each 5 m. = $\frac{1}{3}$ gr.] |             |         |

Sometimes the salicylate of mercury is preferred, and this may be suspended in an oil. The dose is from  $\frac{3}{4}$  of a grain (.045 gm.) up. This salt does not cause pain after injection. The injection treatment was further discussed in *THE JOURNAL*, July 27, 1907, page 339. Dr. William S. Gottheil's article in *THE JOURNAL* for August 3, 1907, page 365, should also be referred to.

#### INTERNAL ADMINISTRATION

The yellow iodid, or the red iodid, or the bichlorid of mercury, are the best salts of mercury for internal administration. The dose should begin small and gradually increase to the point of tolerance, unless before such a dose is reached the local lesions begin to disappear.

The teeth and gums should be carefully watched, and while it may be necessary to cause a little tenderness of the gums, stomatitis should not be allowed to develop except, perhaps, unavoidably in unexpected cases of idiosyncrasy to mercury. If nausea and vomiting, or diarrhea occur, the mercury must be stopped and some astringent iron administered. A slight looseness of the bowels may be tolerated. Sometimes it is advisable for a short period, until tolerance to mercury is acquired, to give a small daily dose of opium or morphin, as perhaps  $\frac{1}{10}$  of a grain of morphin once or, at most, twice a day. Such should not be long continued, and it rarely is necessary. It is also generally advisable, at least in the early months of the treatment, to give some iron daily, either as Blaud pill or reduced iron tablet, in a dose of 3 grains, three times a day, after meals. Whether or not a bitter tonic is needed depends on the appetite of the patient. During all the early stages of syphilis the patient should be encouraged and his fears of future usefulness, or permanent or transmittable disease, quieted.

#### MERCURY BY INUNCTION

If it is deemed best to give the mercury by inunction the oleate is perhaps the best preparation, and a small amount, from the size of a pea to the size of a hazelnut may be rubbed into different parts of the body. This should generally be done daily, then every other day, and later every third day. The patient should first prepare

the part, and this had best be the inside of the thigh or the inside of the upper arm, or the side of the abdomen, and the parts used should be alternated and the round made from one part to the next in regular series. The skin should first be washed with soap and water, then dried, and then the oleate rubbed in. As soon as it is thoroughly rubbed in the part may be covered with a piece of flannel pinned to the underclothing. This allows absorption to continue and prevents staining the clothing. At least twice a week the patient should have a good hot bath, and, in fact, a patient under any continuous administration of mercury should have tub baths at least twice a week.

#### LENGTH OF TREATMENT

The length of time mercury should be given before the dose be reduced or when it may be intermitted, or whether or not it should be administered for the whole period of three years, is a subject still open to discussion. Pedersen does not state when a dose found sufficient should be diminished, but he does believe that the mercury should be given, or at least the treatment, for three years.

The question as to when an iodid should be given, or how long, or whether an iodid and mercury should be administered simultaneously, or when an iodid may be substituted for the mercury, is again a subject open for discussion. As Pedersen well shows, no hard and fast rule can be laid down for the administration of an iodid, but he advises that a squamous or a tubercular syphilide should call for both mercury and iodid of potassium treatment. Also when there is gummatous formation he believes the mixed treatment should be given. It is still a question whether, with no symptoms present, mercury should be continued through the three years or whether iodid should be substituted. It is also not positively demonstrated that mercury having long been administered may not remain deposited in different parts of the body, and doses of iodid given continuously may liberate such deposited mercury. In other words, the patient may possibly be still undergoing the action of mercury, although no fresh mercury is at this time administered. It seems advisable, however, with definite syphilitic

manifestations, even with definite secondary, especially tertiary manifestations of syphilis, to use the mixed treatment. The patient is thus given every chance of the lesion becoming healed.

### IODISM

While the iodid of potassium is the salt most generally used, the sodium iodid is perhaps preferable, since the sodium element is not as debilitating to muscle tissue as is the potassium. This is especially true of the cardiac muscle. Hence when large doses must be given, or when the dosage must be prolonged, the iodid of sodium should be preferred. This salt also sometimes seems less likely to disturb the stomach.

The symptoms of iodism should be avoided if possible. These symptoms are coryza, frontal headache, reddening of the eyelids, a strong, metallic taste in the mouth, sometimes a profuse flow of saliva and gastric indigestion. It is unimportant whether the iodid is ordered largely diluted or in saturated solution, but it should never be ordered in any syrupy, nasty mixture. It is preferably administered in milk or in an alkaline water. It is generally best administered after a meal, theoretically best an hour after meals, as it slightly inhibits digestion. When an iodid is administered the yellow iodid, i. e., the protoiodid, of mercury should not be the salt selected for simultaneous administration, as it is likely to be chemically changed into the biniodid (red iodid) of mercury, which salt would then be present in a poisonous quantity. The following prescriptions may be used:

|   |               |
|---|---------------|
| R.  | gm.           |
| Sodii iodidi .....                        | 25            |
| Aquæ destillatæ, q. s. ad saturandum..... | q. s. ad sat. |

M. et sig.: Five drops with milk or water, three times a day, after meals.

Each minim of this solution represents a grain of the drug.\* The dose should be gradually increased until the amount given is deemed sufficient.

Or

---

\* The statement frequently made that a drop of a saturated solution of potassium or sodium iodid represents a grain of the drug is apt to lead the physician into error, as the size of a drop varies with the size and nature of the container from which it is dropped. See THE JOURNAL A. M. A., Oct. 21, 1908, p. 1526.

| R.                    | gm. or c.c. |          |
|-----------------------|-------------|----------|
| Potassii iodidi ..... | 10          | or ʒiiss |
| Aque .....            | 100         | ℥ʒiii    |

M. et sig.: One-half a teaspoonful, in milk or water, three times a day, after meals.

The iodids have been given in enormous doses, especially where gumma of the central nervous system has been diagnosed. It is a question whether such large doses are justifiable and even whether such large doses are of advantage. It is probable that ordinary fair-sized doses can do as much chemical and biologic good in causing resorption of connective tissue formations, the blood and cells being only able to absorb and utilize a certain amount of iodin, as could possibly be caused by enormous doses. In other words, enormous doses are illogical and are probably rapidly passed out of the body by the excretions.

Various other preparations of iodin are offered which are said to have the advantage of the above iodids in that they do not cause disturbance of the stomach and that they do not as readily cause iodism. When these preparations are analyzed and the exact amount of iodin which they contain discovered it is seen that the reason that they do not cause these symptoms is because the amount of iodin is so small. Consequently, if iodism is caused by potassium or sodium iodid, or they are not tolerated by the stomach, all the physician needs to do is to reduce the dose to that which will not cause disturbing symptoms, and it will then be as large a dose of iodin as would be given by an ordinary dose of one of the patented preparations.

It is possible that the thyroid gland is caused to atrophy earlier than normally by the prolonged action of mercury, and this may be a reason why the iodids have been found to be of such value in the later stages of syphilis, when connective tissue processes are so likely to develop, arteriosclerosis, locomotor ataxia, or some other sclerosis. An iodid in ordinary doses certainly stimulates the thyroid gland, and it is quite likely that when the condition to be combated is not serious, in the later stages of syphilis, a small dose of thyroid gland, as represented by two or three grains of the dried extract each day, may prove a valuable adjunct to the late treat-



ment of syphilis, and may prevent, if given for a short period during each year, some of the degenerations which develop in patients who have had syphilis years before.

#### SYPHILITIC MUCOUS PATCHES IN THE THROAT

Dr. J. Philip Kanoky of Kansas City, Mo., recommends (by a private letter) the following treatment of the above condition, as the most successful that he has yet found: He first mops the affected surfaces dry with cotton swabs and then thoroughly paints the plaques with the official tincture of iodine. Immediately afterward he applies, by means of a swab, a 2 or 3 per cent. solution of bichlorid of mercury in water. The patient is cautioned against swallowing his saliva at this time, and in about five minutes he should rinse out his mouth and throat with water. Kanoky finds that two or three such applications are generally sufficient to heal the lesions. He believes that this treatment is "more effective and reliable than applications with silver, methylene blue, chromic acid, lactic acid, and acid nitrate of mercury."

---

#### SNAKE POISONING IN THE UNITED STATES

Dr. Prentiss Willson, Washington, D. C., in the *Archives of Internal Medicine*, June, 1908, gives the results of his study and analysis of 740 cases of snake poisoning in this country. The article is complete and should be carefully read, but many of the valuable conclusions arrived at and the sensible interpretation of conditions and the proper management of the poisoning may well be described here.

Snakes may be divided into two large classes, the colubrine and the viperine, the former class being, with few exceptions, absolutely harmless, and in the United States but two members of this colubrine class are venomous or dangerous to man. These are the so-called coral snakes. The viperine snakes are divided into two families, the true vipers and the pit-vipers, all of which are venomous. It is the pit-vipers only, however, that are found in the Western Hemisphere, and they have been so named from "the presence of a pit or fossa at the side of the face below and between the nostril and the eye." New England is almost free from venomous

snakes, though the rattlesnakes, varying in species in different parts of the country, may be found all over the United States. The copperhead snake is found in the middle states and the southern states, while the coral snake is found in the southern states and in the southwest. "The water moccasin, sometimes called the cottonmouth, or branch moccasin, is found only in the southern states."

#### VENOMOUS SNAKES

Willson states that "all the pit-vipers, rattlesnakes, copperhead, and water moccasin correspond closely to the popular ideas concerning the general appearance of the poisonous snakes. The head is broad and triangular, and sharply differentiated from the neck. The body is thick and heavy in comparison with its length, and the tail is short and blunt. The three features characteristic of all the pit-vipers and of no other American species, the detection of any one of which establishes beyond all doubt the venomous nature of any given snake are: First, the presence in the anterior portion of the upper jaw of two hollow erectile fangs; second, the pit; and, third, the presence on the ventral surface of the tail of scales undivided in the median line." "In identifying the coral snakes the main dependence must be placed on the presence of the fangs and on the peculiar and gaudy coloring." The importance of immediately deciding that a snake that has bitten a human being is venomous is, of course, understood. When, however, the snake has been killed and perhaps crushed, the difficulty of such decision is increased, and, therefore, the detailed signs above described become important.

Snake bites are becoming more and more infrequent, especially in the settled portions of the country, and the rattlesnake especially is being slowly but surely exterminated. The poisonous venom from the pit-viper causes a profound fall in blood pressure, which is undoubtedly the cause of death. The rattlesnake venom causes a decided fall in blood pressure associated with dilation and congestion of the entire portal system, this resulting in a complete failure of the circulation. The circulatory failure from these poisons is attributed to the depression of the vasomotor center in the medulla. Multiple hemorrhages may occur from snake venoms

"due to their disintegrating action on the endothelium of the blood vessels."

#### SYMPTOMS OF SNAKE POISONING

The symptoms of snake poisoning are both constitutional and local, and the constitutional, as just described, are largely those of prostration. The rapidity with which the general symptoms occur varies, but they are usually in evidence less than fifteen minutes. During the preliminary stage, of course, the signs of nervous shock and fear are in evidence. Dizziness, muscular debility, especially of the legs, and finally collapse, if much poison has been absorbed, rapidly occur. "The respiration may be either rapid or shallow, or slow and stertorous." The pulse is of low tension, rapid and feeble, and the temperature subnormal. The skin is cold and clammy from perspiration. "Nausea is usually present, and vomiting is of frequent occurrence." Voluntary motion is more or less completely absent, and the mind may become clouded, though at times it remains remarkably clear. Rarely active delirium may be present at this stage of the poisoning. Coma is rare, except as a terminal event in fatal cases. "Involuntary evacuations of the rectum and bladder may occur."

Local symptoms are always present in cases of crotalin (viperine) poisoning, even when constitutional disturbances are absent. Besides the characteristic appearance of the snake bite, viz., "two (occasionally only one) punctured wounds situated in the center of a rapidly-spreading tumefaction," there are soon the usual evidences "of a rapidly-spreading and inflammatory process of severe grade, with markedly hemorrhagic and necrotic tendencies."

Any subsequent feverish process is probably due to the septic condition of the wound, or there might be a short reactionary rise of temperature after recovery from a collapse. The above symptoms occur from the bite of the crotalin series or the poisonous members of the viperine class, viz., the rattlesnakes, copperheads and water moccasins. Poisoning in this country from the small number of colubrine snakes which are poisonous, viz., the coral snakes, occurs so rarely that the symptoms can not be carefully studied. The bites from these coral

snakes cause "profound prostration, frequently terminating fatally, probably from paralysis of the respiratory center, and with a characteristic absence of local symptoms."

The septic infection starting from the local inflammation from crotalin poisoning is the serious complication of such a snake bite, if the immediate poisoning does not prove fatal. The recovery from the immediate constitutional symptoms varies "from a few hours to two or three days," and the story then becomes one of septic infection or the healing of a poisoned wound.

### PROGNOSIS

The prognosis, of course, "varies with the amount and toxic quality of the venom injected, with the location of the bite and with the age and sex of the patient. The mortality from the coral snake bites, which in this country, as above stated, are rare, is very high and seems to be more than 50 per cent. The death rate in the United States from snake bite is very small, and 99 per cent. of such deaths are due to the crotalin snakes, or pit-vipers. The probable mortality in this country from snake bite is 10 per cent., and probably acute poisoning from alcohol and later septic infection are responsible for a considerable portion of this percentage. Bites on the head and trunk are much more dangerous than on the extremities, and the mortality in children under 10 years of age is double that in adults.

### TREATMENT

While the majority of patients recover from the bite without any treatment for the reason that the amount of venom injected is not a fatal dose, still, as this amount can never be determined, active treatment should be given in every instance. The local and general treatment may be discussed separately, but the local treatment is of primary and overwhelming importance. There can be no doubt that the main therapeutic indication is the prevention of the systemic absorption of a fatal dose of venom from the amount, be it large or small, contained in the tissues immediately around the wound, and if this can not be met the outlook for the patient, no matter what line of general treatment is employed, becomes exceedingly grave. The limitation



and retardation of absorption, by ligatures and other means, and the removal or destruction of the injected venom, are thus the objects of all local treatment. For these purposes local freezing mixtures or ligatures have been used, and Willson believes that the former, as exemplified perhaps by ethyl chlorid spray, is of little value, and that ligatures where the part can be ligated should be the treatment. Of course bites on the head and body may be temporarily frozen as the only quick means of slowing the circulation and, therefore, absorption. The value of the ligature to the part that can be ligated depends on the length of time elapsed between the receipt of the injury and the beginning of the treatment.

As soon as seen the circulation of the part should be absolutely cut off until other local measures can be instituted, and Willson says this is best accomplished by the use "of a series of ligatures between the bite and the heart, at least one of which should be applied to that segment of the limb containing one bone." There is, of course, danger of causing gangrene, especially "in the parts devitalized by the crotalin venom, hence as soon as possible the ligatures should be partially relaxed." If the patient is seen a considerable time after the bite, and constitutional symptoms are in evidence and the local lesion is badly swollen, ligation seems of doubtful utility. On the other hand, ligatures so applied as to impede the return flow of blood and lymph render the absorption more gradual and allow the system to combat the poison and not be overwhelmed by it. Such artificial hyperemia, Willson thinks, does not add to the danger of extensive local necrosis, and should be substituted for the complete stoppage of the circulation as soon as practicable. While cautioning against allowing a limb to be ligated too long, Willson warns against a too sudden resumption of the circulation allowing rapid absorption of the poison. Such a sudden return of the circulation to the part has sometimes caused death from constitutional symptoms. He would advise intermittently relaxing the ligature nearest the heart, letting it become looser and looser until it is entirely removed. The other ligatures may then be taken off in the same way. It would perhaps be rarely justifiable to amputate



a prominent part of any limb for a snake bite, at least in this country.

As most patients suffering from snake bite are seen by the physician only after the complete ligation of an extremity for an hour or more, with the distal portion of the limb swollen and discolored, the most advisable treatment at this time seems to be "a dissection of the wound with free multiple incisions throughout the swollen area, together with such measures as kneading and massage of the part, and its immersion in warm, mild antiseptic solutions to promote hemorrhage and escape of serum." While all the venom could probably not thus be gotten rid of, enough might be removed to make the difference between a poisonous and non-poisonous dose, when the circulation of the part is again allowed to take place. Of course such treatment of multiple incisions should be made with care not to cause injuries to tendons or future cicatricial contractures. As to the local antiseptic that should be used, the most important seems to be a 1 per cent. solution of permanganate of potash. In the local management of snake bites the general principles of aseptic surgery should never be lost sight of.

The general treatment of the patient resolves itself into four heads:

- "1. To destroy the source of the poison.
- "2. To neutralize the poison already in the circulation.
- "3. To aid and to stimulate its elimination.
- "4. To support the patient."

The first has already been discussed. As to the second indication, Willson says that an antitoxin or "serum treatment of snake poisoning, so far as this country is concerned, does not exist;" consequently our treatment must be directed to combating the toxic effects of the poison by such antidotal treatment as seems indicated. Alcohol as ordinarily used, Willson says, is useless and is in no sense antidotal to or destructive of snake venom. Patients bitten by snakes have recovered from enormous doses of alcohol, but some have undoubtedly succumbed to such doses. Strychnin Willson does not think much indicated in poisoning by American snakes, and especially in crotalin poisoning. The profound lowering of the blood pressure should be met and the shock should be treated by absolute rest with the head low, the body

kept warm with artificial heat, and the administration in some manner of suprarenal solutions, probably best by hypodermic injection. One cubic centimeter (15 minims) of a 1 to 1,000 active principle suprarenal solution in water could be repeated in an hour or two, if needed. Physiologic salt solution, either intravenously, by hypodermoclysis, or by enteroclysis, as deemed advisable from the severity of the symptoms, may be used. "This solution may be impregnated with oxygen."

Artificial respiration is of much less importance in the viperine (crotalin) poisoning, i. e., the kind that occurs mostly in this country, than it is in the colubrine poisoning which occurs elsewhere. In other words, as above stated, the colubrine poisoning acts specifically on the respiratory center. However, artificial respiration could never do any harm if it did not save life.

The after-treatment is that of the local lesion, inflammation, or sepsis if it occurred.

---

### ILLUMINATING GAS POISONING

Dr. Glenn I. Jones, in the *American Journal of the Medical Sciences*, January, 1909, after discussing the chemistry and symptomatology of the condition, says that the prognosis is based on "the duration of exposure; degree of coma; condition of the pulse, respiration and temperature; condition of lungs; condition of blood; and the presence of cutaneous blebs." If the coma is prolonged forty-eight hours or more the prognosis is bad. If there is edema the prognosis is bad. If the inhalation of the illuminating gas has endured but a short time, response to treatment is rapid. Jones states that all cases which develop cutaneous blebs end fatally.

The treatment of the patient should be plenty of fresh air: the tongue should be drawn forward, and, if respiration is failing artificial respiration should be begun. Venesection should be done from one arm, and from "a pint to a pint and a half of blood should be removed," and simultaneously a quart of physiologic saline solution should be transfused into the median basilic or cephalic vein of the opposite arm. Two hours later, if there is not sufficient improvement, venesection may be done again. Saline solutions should be given subcutaneously

every two hours in quantities of one pint. Or perhaps better the saline should be given by the colon by the continuous method. Jones believes that these saline solutions "diminish toxemia, lessen the tendency to edema of the lungs, increase the affinity of the red cells for oxygen, and stimulate the circulatory system."

As soon as possible after the patient has been discovered Jones advises the hypodermatic injection of 2 c.c. (30 minims) of ether,  $1/100$  of a grain of atropin, and 2 c.c. (30 minims) of suprarenalin solution (1 to 1000). He does not believe nitroglycerin or other vasodilators are indicated, but that vasoconstriction is what is needed. Dry heat should be applied to the body to prevent the loss of that necessity of life.

Jones believes that while the venesection and injections of saline are being done an assistant should pass the stomach tube and wash out the stomach with a solution of potassium permanganate and then introduce into the stomach a solution containing 90 grams (3 ounces) of magnesium sulphate. If at any time the respiration or circulation fails, artificial respiration should be done again and circulatory stimulants again administered.

Jones does not believe that direct transfusion of blood is of any more benefit than the saline transfusions.

If the patient survives, the urine should be watched daily for some time that disturbances of the kidneys may be immediately noted.

Jones does not believe that inhalations of oxygen have any more value than ordinary air.

In all serious conditions of shock, coma and collapse, while everything that ought to be done should be done, there is a constant tendency to do too much, especially with drugs hypodermatically. Jones does not caution against the over-use of atropin or suprarenal preparations, but simply states that the suprarenalin should be repeated when indicated. If the suprarenal solution is injected hypodermatically the blood will acquire the vasoconstricting material slowly and continuously for a long time. Therefore it would be inadvisable to inject a suprarenal solution too frequently, especially as the dose he first advises, 2 c.c. of a 1 to 1000 suprarenal solution, is very large, in fact, large enough for serious consequences if the blood acquired it too rapidly.

He also does not state how often the ether should be administered, and it would seem that the secondary effect of ether would be that of a vasodilator, although the primary effect is quick and immediate stimulation. In other words, after the attempt to quicken the circulation or awaken a patient by the stimulation of ether hypodermatically it would seem inadvisable to repeat it frequently.

Also 1/100 of a grain of atropin hypodermatically should not be repeated frequently, certainly not for a number of hours.

It is not clear, if there is circulatory failure, why the hypodermatic use of strychnin is not advised.

As a circulatory and cerebral stimulant caffein should be considered, and also the hypodermatic use of a saturated solution of camphor in sterilized olive oil.

In the *Boston Medical and Surgical Journal*, May 27, 1909, Dr. Harold W. Dana, Boston, describes a method of treatment found successful in all of the six instances reported. While some of the treatment was varied in the individual cases, the main treatment to which Dana ascribes the success is the subcutaneous injection of from 1 to 2 pints of hot sterile modified Ringer's solution. The injection was always made under the breasts, and the solution used is as follows:

|                         |       |       |
|-------------------------|-------|-------|
| Calcium chlorid .....   | .25   | gram. |
| Potassium chlorid ..... | .083  | gram. |
| Sodium chlorid .....    | 7.50  | gram. |
| Distilled water .....   | 1000. | c.c.  |

Other treatments which were instituted were oxygen inhalations, the hypodermic injection of 1/40 of a grain of sulphate of strychnin, hot milk by the mouth and sometimes by the rectum, sometimes brandy or whiskey, sometimes 1/100 of a grain of atropin hypodermatically, and sometimes the patient was surrounded with dry heat. Sometimes ammonium carbonate, 0.30 gram (5 grains), once in four hours, was administered. Sometimes caffein was used. A favorite mixture for administration was as follows:

| R.                         | gm. or c.c. |            |
|----------------------------|-------------|------------|
| Strychninæ sulphatis ..... | 1   008     | gr. 1/8    |
| Ammonii carbonatis .....   | 1   60      | or gr. xxv |
| Spiritus frumenti .....    | 150         | fl.3v      |

M. et Sig.: Two tablespoonfuls, in water, every 4 hours.



## OBESITY

Moritz, in the *Muench. med. Wchenschr.*, July 28, 1908, advises an exclusive milk diet to reduce obesity, the average patient receiving about two quarts of milk a day. This is divided into a pint at 7:30 a. m., a half-pint at 10 a. m., a pint at 1 p. m., a pint at 4 p. m., and a half-pint at 7 p. m. This quantity should be increased or diminished, depending on the loss of weight. If the loss is too rapid the milk is increased, and if too slow the amount is diminished. The milk may be taken cold or hot, with or without lime water, or some soured milk preparation may be substituted.

This method of treatment is so simple that it would seem advisable to give it a trial in almost any instance. In kidney insufficiency it would be good treatment. In cardiac insufficiency, with a tendency to dropsy, it would not be good treatment, on account of the amount of liquid the patient would receive, it being better to reduce the liquids in cardiac or circulatory insufficiency.

If the bowels do not move freely on this milk diet some laxative should be coincidentally administered.

It is also supposable that some patients who must work actively would become very weak on this milk diet, and such patients should be allowed some meat once a day or one or two eggs a day. Two eggs yield 140 calories and would allow a reduction of one glass in the amount of milk.

---

RHEUMATISM

Dr. Joseph E. Winter, Professor of Diseases of Children, Cornell University Medical College, read an interesting paper on this subject before the Alumni Society of Bellevue Hospital, on Nov. 6, 1907. He associates acute rheumatism with chorea and tonsillitis as having the same etiologic factors and the same complications, with, of course, endocarditis as the most important sequence. He does not mention or discuss the germ theory of acute inflammatory arthritis, but believes that hyperacidity of the system is sufficient to cause acute inflammation and account for all of the symptoms. While acute rheumatic inflammation may remain in one or more joints for a shorter or longer period, even months,



the inflammation may then cease and the joint become perfect, there being no permanent impairment and no disorganization of tissue. "At any time in the course of a rheumatic fever the heart, the lungs, or the nervous centers may become involved and terminate life abruptly."

In rheumatism, if the tongue is coated, he advises the free administration of calomel followed by rhubarb and soda, as:

For a child ten years old:

| R.                             | gm. |    |        |
|--------------------------------|-----|----|--------|
| Hydrargyri chloridi mitis..... | 50  |    | gr. x  |
| Sodii bicarbonatis .....       | 10  | or | gr. ii |
| M. et fac chartulam 1.         |     |    |        |

Sig.: To be taken at once, with plenty of water or milk.

To be followed by:

| R.   | c.c. |    |        |
|--|------|----|--------|
| Misturæ rhei et sodæ.....  | 100  | or | fl.iii |
| Sig.: A teaspoonful, with water, three or four times a day, as deemed advisable. |      |    |        |

If this preparation should cause too much activity of the bowels the following should be substituted:

| R.                        | gm. |    |          |
|---------------------------|-----|----|----------|
| Bismuthi subnitratis..... | 5   | or | gr. lxxv |
| Sodii bicarbonatis .....  | 10  |    | 3iiss    |
| M. et fac chartulas 20.   |     |    |          |

Sig.: A powder every six hours.

He then begins the use of salicylic acid, and states that "a child of ten years may be given .60 gram (10 grains) every two hours for twenty-four hours, and thereafter according to effect."\*

Neither salicylic acid nor any other known medicinal treatment will cure rheumatism. The diet is paramount, and Winters urges that "while a vestige of active rheumatism tarries milk must constitute the sole diet." In other words, milk is a purin- (uric acid forming) free diet and contains an abundance of potassium phosphate. All active tonics, alcoholics, manufactured liquid beef preparations, and all home made meat broths prevent the success of the above simple treatment of rheumatism. As there is profuse sweating in this disease the patient should be urged to drink plenty of pure

---

\* For the administration of salicylic acid or some preparation containing salicylic acid see page 124 of this book.

water. As soon as the local evidences of rheumatism have disappeared the diet should be increased in the following manner:

#### DIET

First, cereals may be given, well cooked and served hot with butter and salt or with milk, but without sugar. The cereal may be rice, hominy, cream of wheat, or oatmeal. No malted food, or predigested food, or so-called baby food should be a substitute for one of the above cereal foods, freshly prepared.

The next increase in the diet is the addition of a baked potato and bread, and soon green vegetables may be allowed, excluding, however, beets and sweet potatoes. If tomatoes are craved they may be eaten raw but without vinegar or sugar.

Next, fresh fruits should be added, and these should be taken raw, not cooked. Grapes and grape fruit should not be allowed. Winters states that one ounce of lemon juice contains 3 grams (45 grains) of citric acid, and as citric acid is an antirheumatic, lemon ranks high as a fresh fruit in rheumatic conditions. All these vegetables acids oxidize to carbonic acid after ingestion. Winters emphasizes his belief that rheumatic patients should not eat sugar until long after complete recovery. When meat is added to the diet it should not be as broths, but in the form of meat, and whether it is red or white meat is indifferent.

Any food or drink that tends to cause intestinal indigestion or fermentation is likely to precipitate a lurking rheumatism. Hence fancy dishes and all sweets, even ice cream, alcohol in any form, and even tea and coffee, if they cause the least indigestion, should be prohibited. Alcohol in any form should generally be permanently eschewed.

A child with chorea should have a diet as rigid as the above advised for rheumatism, depending upon the intensity of the disease. It should also not be allowed at the table that it need not crave the food that it sees provided for the rest of the family. It must be very positively declared that no one shall surreptitiously give a choreic child sweets or sugar in any form. The bowels should be kept in good condition, perhaps best with the above rhubarb and soda mixture. If a stronger

laxative is needed it should be administered, and none is better than an occasional dose of castor oil for such a patient. A patient with chorea should be kept at absolute rest and as quiet as possible, if the disease is at all severe, and the calmer the nurse or attendant of the child, and the fewer people or children the child sees, the more rapidly will its chorea abate.

Small doses of bromid of sodium may be necessary to aid in diminishing the muscle restlessness, as:

For a child ten years old:

| R.                  | gm. or c.c. |         |
|---------------------|-------------|---------|
| Sodii bromidi ..... | 10          | or ʒiii |
| Aquæ .....          | 100         | ʒiv     |

M. et Sig.: A teaspoonful in water, three times a day, after meals.

In the *New York Medical Journal*, August 29, and Sept. 5, 12, and 19, 1908, appears a series of articles on the treatment of rheumatism. Twelve physicians contribute articles in the discussion of this subject.

For the purpose of analyzing the treatment and arriving at a conclusion of the best management of this disease, it seems best to divide the treatment under three heads; general, local, and specific.

#### GENERAL TREATMENT

The patient, of course, should be in bed, and it is emphasized that he should remain there several days after the temperature has become normal. Five of the writers insist that the patient lie between blankets; two make this optional; and the remainder allow it to be implied that the patient lies between sheets.

The majority order early purgation, and also give calomel, mostly followed by a saline, and one specifies magnesium citrate. One physician gives calomel in divided doses until purgation, which we do not consider good treatment. Daily movements are advised, with sodium phosphate by one contributor, and Rochelle salts by another, and others say "avoid constipation," or "cause daily movements," without stating how they accomplish this. One prefers to use an aromatic fluid-extract of cascara sagrada (*rhamnus purshiana*); another uses an aloin, belladonna, ipecac and strychnin tablet. In other words, it seems generally, as is true in the treatment of all infections and all feverish pro-

cesses, that a daily movement of the bowels should be caused in the pleasantest manner possible with the least possible pain, and without causing diarrhea: calomel or castor oil as a primary purgative, and whether small doses of a saline, or other gentle laxative, should be used, daily, is a matter of individual choice.

All the authors allow plenty of plain water or mineral water, barley water, or oatmeal water. In other words, plenty of water in a disease that causes so much perspiration and requires so much elimination is desirable and advisable. Lemonade with but little sugar is advised by some, and certainly lemons or oranges may be allowed in rheumatism, even by those who believe that there is a hyperacidity of the urine or a lessened alkalinity of the blood, as the salts of these fruits really act as alkalis in the system.

The diet generally advised is, of course, light, with milk predominating, and eggs allowed. Certainly the simple cereals may be given, and skimmed milk may be given. While theoretically milk is the correct diet for rheumatism, in individual instances in which it causes fermentation and indigestion, some other food should be substituted. Whether the cause of rheumatism, or the infection, if it is due to a germ, enters the system through the tonsils or through the intestines, it is certainly true that any treatment aimed toward diminishing intestinal fermentation and intestinal stagnation is good treatment, and it should not be forgotten that in administering the specific treatment of rheumatism, viz., the salicylates, we are using the best bowel antiseptics that we possess. Consequently, the best food is that which digests most easily and causes the least intestinal disturbance. Meats should certainly not be given in the acute stage of articular rheumatism. However, it is positively unwise to withhold meat from a patient who has been accustomed to it, for too many weeks. While the products caused by the digestion of meat may aggravate an acute rheumatism, such products are not the cause of rheumatism.

#### LOCAL TREATMENT

One of the contributors uses ice cold sponge baths as often as every one or two hours, if there is fever.

Two others use cold sponging occasionally. One uses hot baths, and one hot water bag applications.

Various liniments for application to the joints are mentioned, but the most approved seems to be Fuller's lotion, which is as follows:

| R.                       | gm. or c.c. |             |
|--------------------------|-------------|-------------|
| Sodii bicarbonatis ..... | 30          | 3i          |
| Tincturæ opii .....      | 50          | or fl.ʒiiss |
| Glycerini .....          | 100         | fl.ʒiii     |
| Aquæ, ad .....           | 500         | ad, Oi      |

M. et Sig.: Use externally, as directed.

Lead and opium wash is mentioned, and one contributor uses a 4 per cent. solution of sodium bicarbonate, and another uses a saturated solution of magnesium sulphate. Two paint the joints with 50 per cent. ichthyol. Ichthyol may be used in water, in olive oil, in glycerin, or in an ointment. One writer advises Paquelin cautery applications above and below the painful joint, and one believes in the Bier hyperemic treatment. All bandage the painful joint, and whatever application is used, it is covered with oil silk, and the bandages are kept wet.

Twelve different combinations of either oil of winter-green or salicylic acid are mentioned for external use. The following are types:

| R.                     | gm. or c.c. |              |
|------------------------|-------------|--------------|
| Camphoræ .....         | 20          | 3v           |
| Chlorali hydrati ..... | 5           | or           |
| Olei gaultheriæ .....  | 5           | āā, gr. lxxv |
| Alcoholis .....        | 30          | fl.ʒi        |

M. et Sig.: Paint over the surface surrounding the painful joint every twelve hours, then cover with cotton and oiled silk.

| R.                         | gm. or c.c. |            |
|----------------------------|-------------|------------|
| Methylis salicylatis ..... | 15          |            |
| Ichthyolis .....           | 15          | āā, fl.ʒss |
| Glycerini .....            | 100         | or fl.ʒiii |
| Alcoholis, ad .....        | 200         | ad, fl.ʒvi |

M. et Sig.: Use externally, as directed.

Eight of the contributors splint the painful joint. This is all right where there are only one or two inflamed joints, but it can not be done to a series.

#### SPECIFIC TREATMENT

Two of the contributors advise very strongly the body hot-air treatment to the exclusion of everything else, as furnishing the greatest benefit in the shortest time



in acute articular rheumatism. They would give such baking treatment to the patient once every day for seven days, and then much less frequently. When we consider that local warmth is very acceptable and very soothing to the joints of these suffering patients, when we also consider that there is a tendency to cardiac complication, and nothing more relieves cardiac disturbance than perfect surface circulation, and when it seems a fact that in this disease recovery ensues by profuse sweating and by greatly increased elimination through the skin, and when we know that body hot-air treatment does all these things, it would seem as though this treatment were a perfect one for acute inflammatory rheumatism. Hence, if it is a fact, as it seems to be, that body hot-air treatment can shorten this disease that tends to be protracted, and prevent recurrences of this disease that tends to recur, then, when a patient afflicted with this disease has the ability to go to an institution where such treatment can be carried out, he should be advised to do so. It would also seem that general hospitals should be equipped with apparatus to carry out such treatment of their rheumatic patients.

All contributors use the salicylates in acute articular rheumatism. The salt most preferred is sodium salicylate, given well diluted, either in water or milk. Strontium salicylate is also recommended, and several of the unofficial salicylate preparations. The amount of salicylate given is large, especially the first day, and less subsequently; as much as 8 or 10 grams (2 to 2½ drams) in the first twenty-four hours.

There are certainly various preparations of salicylic acid which are pleasanter to take than sodium salicylate, but if salicylic acid is desired, it must be given in large enough doses to cause the same symptoms that sodium salicylate would cause. If it is wise to give large doses of salicylic acid, or if it is salicylic acid that combats, or counteracts, or controls rheumatism, then ordinary doses of the preparations that contain only small amounts of salicylic acid can not be satisfactory treatment. If, on the other hand, it is not advisable to give large doses of salicylic acid, then small doses of sodium salicylate can be administered and they will cause no unpleasant symptoms. If large doses should be given or must be given, then unpleasant salicylism or head

symptoms may be prevented, if deemed advisable, in the same manner as cinchonism is prevented, either by small amounts of bromids, or morphin, or ergot. Such controlling medication, however, is not often needed, as it is hardly necessary to do more than produce slight salicylism with salicylates. When the system so feels the salicylic acid, certainly enough salicylate is circulating in the blood (and it is probably always absorbed as sodium salicylate) to do all the good that larger doses will do, and as soon as flushing of the face and ringing of the ears occur, the dose and the frequency of the dose should be diminished. Only the salicylates prepared from natural salicylic acid preparations should be administered internally, and sometimes natural salicylic acid in the form of the oil of wintergreen, in 10 minim capsules, every three hours, is good treatment.

In the dose necessary to control rheumatism, sodium salicylate should be given in solution, or it may be ordered in powders, to be drunk after solution. Capsules are likely to cause gastric irritation. Sodium salicylate may be administered as follows:

|                         |             |         |
|-------------------------|-------------|---------|
| R.                      | gm. or c.c. |         |
| Sodii salicylatis ..... | 20          | or 3v   |
| Aquæ gaultheriæ .....   | 100         | fl. ʒiv |

M. et Sig.: A teaspoonful, well diluted, every three hours, or as directed.

Or:

|                                |             |           |
|--------------------------------|-------------|-----------|
| R.                             | gm. or c.c. |           |
| Acidi salicyli .....           | 10          | or        |
| Sodii bicarbonatis sicci ..... | 10          | āā. ʒiiss |

M. et fac. chartulas 20.

Sig.: One powder, dissolved in water, and drunk while effervescing, every three hours, or as directed.

As soon as the pain is less, the temperature less, the swelling of the joints less, and no new joints become affected, the sodium salicylate should be again diminished in amount and frequency. It should be stopped altogether as soon as the joint symptoms have disappeared, or at the end of a week or ten days. The prolonged use of salicylates is pernicious to the blood and circulation, and serious and protracted anemia and debility have followed its too long use in large doses. On the other hand, as recommended by some of the contributors of the above articles, the substitution, for the salicylate,

of potassium acetate, bicarbonate, or citrate, in other words, an alkaline treatment for a series of days, and then again to give the salicylate seems to be very advisable. Potassium citrate is the pleasantest and acts as satisfactorily as either of the other potash salts. It may be given as:

| R.   | gm. or c.c. |        |
|--|-------------|--------|
| Potassii citratis .....  | 40℥         | or 5x  |
| Aquæ menthæ piperitæ .....   | 200℥        | ℥.3vii |
| M. et Sig.: Two teaspoonfuls, in water, every three or four hours. |             |        |

As soon as the urine becomes alkaline, the frequency of the administration of the alkali should be diminished.

In this disease that tends so frequently to recur, and to recur immediately, it is advisable to give two or three days of the salicylate treatment after a week of the alkaline treatment, and then again every two weeks for several times. It has even seemed advisable to give a child who has had rheumatism a week's treatment of salicylate of soda, in the proper dose for its age, every two or three months after recovery from its primary attack, and then once in six months for several years.

### PAIN

While heat, whether dry or moist, and especially the hot-air body treatment may preclude the necessity of using morphin for pain in this disease, more especially perhaps than in some others, pain can not be endured, and the patient should not be allowed to suffer. A disease that causes pain on every movement, voluntary or involuntary, of the body requires a narcotic, and morphin is often needed, and should be given hypodermatically, or by the mouth, depending on the intensity of the pain, or whether or not, it disturbs the stomach when administered by the mouth. It is rare that codein is strong enough, except in large doses, to stop arthritic pain, and there is really very little difference whether small doses of morphin are given or large doses of codein, as the effect produced is similar. If much morphin is administered so that the patient sleeps and is indifferent to his sensations, he must be aroused periodically and urged to evacuate his bladder.

Ordinarily, the coal-tar analgesics should not be used, as, in the first place, if the pain is severe they are not

strong enough, and in the second place the salicylates are debilitating, and no other debilitating drug should be given. If there is high temperature in the early part of the disease a few doses of acetphenetidinum (phenacetin) may be administered.

In the treatment of this disease, it should be urged that the heart be watched daily by stethoscopic examination, to note as soon as signs of endocarditis occur. This complication is so insidious that it may not cause symptoms appreciable to the patient. There may, however, be an increase of temperature, as there may be cardiac pain or distress. While it is not the object of this article to describe the treatment of endocarditis, it may be stated that an ice bag over the heart may inhibit the inflammation, that the salicylates should be stopped if endocarditis occurs, and that rest and convalescence after such a complication should be greatly prolonged.

Profuse sweating without fever requires frequent spongings with hot water, may require spongings with warm alcohol, and may even require a nightly dose of atropin, from 1/200 to 1/100 of a grain. If the heart has not been affected, ergot may be given for its aid in checking the profuse perspiration.

Certainly during convalescence, and often best after the first ten days or two weeks, iron should be administered. It should be remembered that the diet advised for rheumatism contains no iron, that the disease is debilitating to all the blood-making organs, that the salicylates and alkalies are both debilitants of the blood, and consequently iron is indicated. Many a prolonged anemia following rheumatism is due to the shortage of this needed element in the body. Iron may be administered in any simple manner, as by a 0.05 gram (or 1 grain) capsule of reduced iron three times a day, or by a saccharated oxide of iron (*Eisenzucker*) three grain tablet, three times a day, or as follows:

|                              |             |
|------------------------------|-------------|
| R.                           | gm. or c.c. |
| Tincturæ ferri chloridi..... | 25  or 1℥i  |

Sig.: Five drops in a small glass of fresh lemonade, three times a day, after meals.

Circulatory weakness during rheumatic fever may be combated with strychnin, with camphor, with aromatic spirits of ammonia, rarely with alcohol, sometimes with



caffein, and exceptionally with strophanthus or digitalis, the latter provided that there has not been prolonged high fever and there is no acute endocarditis present.

Lees, in the *British Medical Journal*, Jan. 16, 1909, says that part of the lack of successful treatment of rheumatism with salicylic acid is due to the belief that it is a heart depressant. He insists that it is not detrimental to the heart, and that all unpleasant "side effects" may be prevented by giving sodium bicarbonate coincidentally in twice the amount of the salicylate. The initial adult dose is 15 grains, given ten times the first twenty-four hours, or 150 grains for the first day. He would then increase each dose for the second day by at least two grains, viz., 20 grains more than the first day, and would again increase the third day, such increase continuing until the temperature is and remains normal. With each dose of salicylate, however, he would give twice as much bicarbonate of sodium. He believes the cause of the cardiac complication is the acids of the toxins of the disease, and that the way to combat this is by alkaline salt, because potash is slightly depressing to the heart, and soda almost not at all.

His initial dose for a child from seven to twelve years of age is 10 grains, and ten doses a day, or 100 grains the first day, and then increased as above.

When the symptoms are all ameliorated, Lees then gradually reduces the twenty-four hour dose of salicylate.

#### DIFFERENTIATE FROM FLATFOOT

A man, 47 years of age, whose business required him to be on his feet a greater part of the day, complained of pains in his ankles, calves of the legs, knees, and thighs, from which he had suffered for two years. He had been treated for rheumatism, for gout, and for "uricacidemia" by different physicians, and had even taken a trip to California, where he remained for nearly three months. No treatment had been of any benefit, and even the California trip, on which he had gained twelve pounds in weight, had not prevented his leg aches.

Examination showed that the man was well; he did not have inflammatory rheumatism, chronic rheumatism, gouty rheumatism, uricacidemia; he had no spinal



cord trouble, no locomotor ataxia, no specific history, no circulatory trouble, no edemas, no varicose veins, no toxemias, no metallic poisonings; he did not smoke, and therefore had no tobacco poisoning; any one or all of which might cause pain in his legs. When he was made to stand barefooted on smoked, glazed paper it was seen that he had partially lost the arch in both feet; in other words, he had become partially flat-footed, or weak-footed, as it may be better termed.

The loss of the plantar arches was the cause of such loss in the perfect transmission of the weight as to produce straining of the different muscles and tendons of the legs, and would account for his suffering. He was ordered inside shoe supports for these broken arches, and these relieved him of further trouble.

---

### GOUT

Dr. Oliver T. Osborne, New Haven, Conn. (*Monthly Cyclopedia and Medical Bulletin*, August, 1908), discusses the etiology and treatment of this disease. He says that gout seems to be a disturbance of the metabolism, and "may be defined as a non-infectious, aseptic disease due to a disturbance of the transformation of the protein food molecule, more especially the purin molecule, to the excretion end-product." Hence there is no one cause of gout. This definition "does not diminish the importance of predisposing causes of gout, such as heredity, age, habits, alcohol, overeating of rich foods, prolonged mental depression or worry, and such infections as leave lesions of the organs engaged in nitrogenous metabolism." Acute attacks of gout may be precipitated by eating more or less proteins containing purin bases (nucleoproteids). This does not mean that uric acid is a cause of gout, but that foods rich in nucleins, and such combinations of food and alcohol as will produce large quantities of uric acid, will certainly make a gouty condition worse.

It is not necessary for the diagnosis of gout or for a patient to be "gouty" "that he should have gouty joints, chalky nodes, gouty kidneys, concretions, or even shooting joint pains. An increased arterial tension, increased force of the heart beat, a little extra amount of urine,

a slightly increased frequency of micturition, repeated gastrointestinal upsets, skin irritations, nerve pains, frequent headaches, especially occipital," all simple disturbances in themselves, when taken together mean that a gouty condition is present. Any condition that much disturbs the normal metabolism of the nitrogenous food from ingestion to excretion may cause gout, and if this disturbance is continually in evidence or intermittently repeated, confirmed gout may be the result.

"To treat gout properly we should:

"1. Carefully study the functioning of each organ.

"2. Know the kinds and amounts of foods ingested and how well they are excreted, and especially in what form the nitrogen appears in the urine; how much urea, how much uric acid.

"3. Arrange the food and liquids ingested to meet the defects discovered in the functioning of the organs of metabolism and excretion.

"4. Treat or modify all complications present.

"In other words, there is no one way to treat or manage chronic gout." Each patient must be individualized as to the food and drink he should take.

"That deposits of urates around the joints at times disappear may be an observed fact, but there is no known treatment, medicinal, electric, hydrotherapeutic or other that will cause the dissolution of such deposits." All good hygiene, such as mental and physical rest, clean, dry air when the patient can obtain it, and such hydrotherapeutic measures as tend to keep the skin healthy will aid in preventing gouty symptoms.

If there is an exacerbation of gout or an acute attack there is no treatment "more efficient than a calomel purge, saline laxatives, and salicylic acid or some form of colchicum." An acutely inflamed gouty joint needs "rest, moist sedative fomentations, morphin sufficient to stop the pain, a dose or two of a coal-tar product," if deemed advisable, and colchicum or salicylic acid, whichever is found to act better in the individual patient.

Osborne has found that 0.10 to 0.20 gram (2 to 3 grains) of thyroid gland substance, given once a day, for a long period, will many times prevent the recurrence of acute gouty attacks.

## MYALGIA AND JOINT PAINS

Although each physician has his own method of combating such pains, it will not be amiss to refer to a few good things said by Dr. S. Solis-Cohen, in *Merck's Archives*, May, 1901. He believes that for the immediate relief of severe lumbago or wry-neck nothing equals the intramuscular injection of atropin and morphin and he advises 1/60 of a grain (0.001 gm.) of the former (a large dose) and 1/6 of a grain (0.01 gm.) of the latter. He follows this hypodermic treatment with the internal administration of some form of colchicum, as:

R. c.c.  
Vini colchici radiceis ..... 25| or fl̄jī  
Sig.: Ten drops, in water, every four hours.

Or:

R. gm. or c.c.  
Colchicinæ salicylatis ..... |012 or gr. 1 6  
Aquæ gaultheriæ ..... 100| fl̄jiii  
M. et Sig.: A teaspoonful, in water, every four hours.

"In painful affections of the muscles and joints—rheumatic, rheumatoid, gouty, neuralgic and of unknown origin"—he has seen a great deal of relief caused by the external use of oil of wintergreen or oil of birch, as:

R. c.c.  
Olei gaultheriæ ..... 100| or fl̄jiv  
Sig.: Rub frequently over the painful region.

Or:

R. c.c.  
Olei betulæ ..... 100| or fl̄jiv  
Sig.: Rub frequently over the painful region.

Or, these are perhaps well diluted, as:

R. c.c.  
Olei gaultheriæ ..... |  
Olei olivæ ..... āā 50| or āā. fl̄jii  
M. et Sig.: Use externally, as directed.

Or:

R. c.c.  
Methylis salicylatis ..... |  
Olei olivæ ..... āā 50| or āā. fl̄jii  
Sig.: Use externally, as directed.

Of course, in acute articular rheumatism friction or rubbing is contraindicated, and a cloth may be saturated

with the above solutions and laid over the part and then covered with flannel or cotton. Painful nerves are sometimes soothed with the following combination:

| R.                      | gm. |                       |
|-------------------------|-----|-----------------------|
| Mentholis .....         | 10  | or    āā. 3i ss<br>3v |
| Chlorali hydrates ..... | 10  |                       |
| Camphoræ .....          | 20  |                       |

M. et Sig.: Paint over the painful nerve.

He also speaks of the value of guaiacol painted over painful regions, and says that it is even more valuable if combined with wintergreen oil, and perhaps best in the form of an ointment. He also sometimes adds camphor, peppermint, and even mustard, depending on the amount of irritation he wishes to set up. He suggests the following combinations, subject to modification in each individual case, depending on the consistency and the amount of counter-irritation desired:

| R.                       | gm. or c.c. |  |
|--------------------------|-------------|--|
| Olei gaultheriæ .....    | 1           | 50    or    āā, m. xv<br>gr. x<br>āā, 3i |
| Guaiacolis .....         | 1           |  |
| Mentholis .....          | 50          |  |
| Adipis lanæ hydrosi..... | 8           |  |
| Cerati .....             | 8           |  |

M. (Dispense in a tin tube).

Sig.: A small quantity (about the size of a pea) to be well rubbed in over the seat of the pain night and morning.

He finds this prescription of special value in neuralgic headache and intercostal neuralgia. The following he finds useful in painful joints, especially in chronic gout:

| R.                       | gm. or c.c. |   |
|--------------------------|-------------|---|
| Olei gaultheriæ .....    | 1           | 50    or    āā, m. xx<br>āā, gr. xv<br>m. v |
| Guaiacolis .....         | 1           |   |
| Camphoræ .....           | 1           |   |
| Mentholis .....          | 1           |   |
| Olei caryophylli .....   | 50          |   |
| Glycerini .....          |             |   |
| Cerati .....             |             |   |
| Adipis lanæ hydrosi..... | āā, 5       | āā, 3i                                      |

M. et Sig.: A small quantity to be well rubbed in over the seat of pain.

# DISEASES OF THE DIGESTIVE ORGANS

---

## FOUL BREATH

It is rarely excusable for a person having once discovered that the breath is offensive to neglect its prevention. Perhaps the most frequent cause pertains to the teeth. There may be cavities, or there may simply be a lack of cleanliness from an insufficient use of the tooth brush and proper tooth powders, tooth pastes or mouth washes. It is also necessary to remove with a toothpick particles of food which may have become fixed between closely-set teeth. All cavities should be filled and tartar deposits should be regularly removed, not only because of their likelihood to cause disagreeable odor to the breath, but of the possibility of allowing germs to develop and be swallowed. If the stomach is not in a healthy condition and the gastric juice not normal, such germs may not be killed. The proper tooth powder should be determined by the ease with which the teeth are cleaned, some requiring more friction in the powder, and others requiring more soap. The choice of the powder and the frequency with which the teeth should be brushed is determined by the results. They must be kept clean, and the cleaning must be done at least twice a day, morning and at bedtime.

If there is any tendency to alveolitis, or if purulent alveolitis is present, then antiseptic, followed by alkaline, mouth washes should be frequently used until the condition is cured, but if it tends to recur, then such mouth washes should be used once a day, continuously. For a time weak peroxid of hydrogen solutions are beneficial, especially if the acid, which is formed after its oxidizing action, is quickly washed away with an alkaline solution. If the gums are spongy a 5 per cent. solution of potassium chlorate makes an efficient mouth



wash. One of the best local astringents and local antiseptics is a dilute solution (perhaps one part to five) of alcohol in water.

The teeth not being the cause of the odor of the breath, the tonsils should be examined, and not infrequently little calcareous deposits will be found in one or more crypts, or there may be a pocket of caseous deposit back of the tonsil. These should, of course, be removed and the crypts treated with some antiseptic solution and a cleansing antiseptic gargle given.

Another frequent cause of bad breath is postnasal or nasopharyngeal catarrh. If this is a chronic condition the treatment is tedious, and unless the patient thoroughly cooperates, results will be unsatisfactory. The proper treatment of nasal and nasopharyngeal catarrh can only be determined by a study of the individual condition. A warm cleansing solution is, of course, always important and the frequency of its use can only be determined by the rapidity with which the secretion forms deposits.

In atrophic rhinitis the odor is terrible, and, unfortunately, the condition is generally incurable; but there is absolutely no excuse for such a patient polluting the atmosphere of the rooms in which he works or lives. The odor can be prevented by the proper use of mild antiseptic and cleansing solutions.

Wylie, in the *West London Medical Journal*, April, 1908, says that it is useless to expect to clear away fetid accumulations in the nose and nasopharynx with antiseptic solutions, as they do not possess the power of dissolving mucin and albumin, the principal constituents of the crusts. He believes the best solvent is a 1 per cent. solution of sodium sulphate or a 0.5 per cent. solution of sodium borate, in water. He would douche the nose thoroughly with this solution (which must be warmed) until the "crusts and caseous matter" have been removed; then antiseptic solutions may be employed by means of sprays. If the mucous membrane is not degenerated and is still sensitive, he would spray with "liquid paraffin containing menthol, oil of cinnamon, or eucalyptus," but if the fetor is great, and in bad cases of atrophic rhinitis where the mucous mem-

brane is not very sensitive, he would sparingly use Dobell's solution. This solution is as follows:

| R.                       | gm. or c.c. |                |
|--------------------------|-------------|----------------|
| Phenolis .....           | 1           | m. xv          |
| Sodii bicarbonatis ..... | 3           |                |
| Sodii boratis .....      | 3           | or āā, gr. xlv |
| Glycerini .....          | 10          | fl. ʒiiss      |
| Aquæ, ad .....           | 200         | ad, fl. ʒvii   |

M. et Sig.: Use as an antiseptic gargle or as a nasal antiseptic spray.

Wylie attempts to restore healthy secretions by gentle stimulation with a snuff composed of boric acid and attar of roses, but if the disease is atrophic in type and the secretion scanty he uses a very weak formaldehyd solution as a nasal douche. He wisely cautions against carelessness in nasal douching. The very slightest excess of pressure should never be allowed, else the liquid or secretion may be forced into a eustachian canal and middle-ear inflammation follow. He also suggests a nasal douche of "boiled and decanted sea water."

He removes hard crusts painlessly by first subjecting the nasal passages to inhalations of steam, camphor being added to the hot water as a stimulant.

Other causes of disagreeable breath are constipation and dyspepsia. The cause of these conditions should be treated, and as the tongue becomes clean and the pharynx less congested the breath will become better.

Laryngeal and bronchial inflammations and catarrhs, of course, are other causes of bad breath. If the condition is acute or subacute, it can soon be improved by proper treatment. If the condition is a chronic one, mild antiseptic inhalations will largely prevent the fetid condition.

| R.                                    | c.c. |             |
|---------------------------------------|------|-------------|
| Creasoti .....                        | 1    | m. xviii    |
| Olei pini silvestris .....            | 10   | or fl. ʒiii |
| Tincturæ benzoini composita, ad. .... | 100  | ad, fl. ʒiv |

M. et Sig.: To inhale a teaspoonful from boiling water one, two, or three times a day.

The bad breath of acutely sick patients, as with typhoid fever, pneumonia, or other serious illness, can be minimized by the proper care of the mouth, tongue and teeth by the nurse. Even the bad breath of patients suffering from incurable disease may be bettered by good advice and simple local care.

**ANTISEPTIC GARGLES AND MOUTH WASHES**

This is a subject of constant interest. It is not only necessary to use proper gargles in infections of the throat, as diphtheria, follicular tonsillitis and scarlatina, but it is also necessary in all inflammations of the mouth and throat, and very necessary in all acute illnesses and fever conditions, be the cause what it may. It is also now recognized that many digestive disturbances, and perhaps serious blood diseases, may be caused or perpetuated by a foul condition of the teeth and gums. In other words, physicians prescribe more and more frequently alkaline, and more or less antiseptic solutions, or tablets or powders for solution, to promote cleanliness of the mouth and throat.

The proprietary preparations for these purposes are legion, and the price is in many instances out of all proportion to the cheap drugs used in the preparation of these powders or solutions. Still, in some instances bottles of these solutions, approximately containing a pint, are offered by some proprietary firms at a reasonable price. But the prices for which they must be sold over the prescription counter allow only a very small profit to the druggist handling them. Consequently, it seems only fair to the profession of pharmacy, and also more ethical, to order the preparations of the Pharmacopeia and National Formulary that contain practically the same ingredients as these proprietary mouth washes. In other words, the *Liquor Antisepticus* of the Pharmacopeia and the *Liquor Antisepticus Alkalinus* of the National Formulary represent preparations which, when diluted with one or two parts of warm water, make excellent alkaline and mildly antiseptic mouth washes and gargles. However, while aiming to aid the profession of pharmacy, the physician finds that if he orders 200 c.c. or 6 ounces of one of these preparations, the patient is required by many druggists to pay as much as or more than that for which he could obtain a pint bottle of a proprietary preparation. The patient must pay an extortionate price, viz., from 50 to 65 cents, for less than half a pint of a solution the ingredients of which, per pint, costs about 10 cents. Allowing for the preparation, the bottle and the labeling, 25 cents for a bottle containing from six to eight ounces of one of these preparations would yield a handsome profit.

This is not written as a criticism, but as a regret that in the aim of the medical men to prescribe official preparations we find ourselves often defeated by the above condition.

As it has been shown (Wadsworth, *Journal of Infectious Diseases*, 1906, iii, 774), that a diluted alcohol is one of the best antiseptics for use in the mouth in infectious diseases, especially pneumonia, the following makes a cleansing solution for the mouth in acute diseases:

| R.                       | gm. or c.c. |          |
|--------------------------|-------------|----------|
| Sodii chloridi .....     | 2           | 5ss      |
| Sodii bicarbonatis ..... | 50          | ʒi. x    |
| Glycerini .....          | 15          | or flʒss |
| Olei gaultheriæ .....    | 10          | gtt. iii |
| Alcoholis .....          | 100         | flʒiii   |
| Aquæ destillatæ .....    | ad 200      | ad flʒvi |

M. et Sig.: Dilute with an equal part of warm water and use as a mouth wash.

#### ASTRINGENT MOUTH WASH

The following is a suggestion in the *Druggists Circular*, January, 1909:

| R.                                 | gm. or c.c. |            |
|------------------------------------|-------------|------------|
| Tincturæ myrrhæ .....              | 75          | flʒiiss    |
| Tincturæ cardamomi compositæ ..... | 20          | flʒi       |
| Tincturæ cinchonæ compositæ .....  | 75          | or flʒiiss |
| Spiritus caryophylli .....         | 15          | flʒss      |
| Eau de Cologne, ad .....           | 200         | ad, flʒvii |

M. et Sig.: Add a teaspoonful to a glass of warm water, and use as a mouth wash.

#### TOOTHACHE

The *Druggists Circular*, March, 1908, gives the following suggestions for applications for toothache:

| R.                            | c.c. |          |
|-------------------------------|------|----------|
| Creasoti,                     | 5    | or       |
| Chloroformi,                  |      |          |
| Olei caryophylli,             |      |          |
| Olei menthæ piperitæ,         |      |          |
| Olei camphoræ,                |      |          |
| Phenolis liquefacti, āā. .... | 5    | āā, flʒi |

M. et sig.: Apply on cotton or pledgets of felt.

Or,

| R.                               | gm. or c.c. |           |
|----------------------------------|-------------|-----------|
| Phenolis liquefacti . . . . .    | 5           | fl3ii     |
| Camphoræ . . . . .               | 10          | or 5ss    |
| Chloroformi . . . . .            | 25          | fl3i      |
| Olei cajuputi, q. s. ad. . . . . | 50          | ad, fl3ii |

M. et sig.: Apply on cotton or pledgets of felt.

Or,

| R.                            | gm. or c.c. |            |
|-------------------------------|-------------|------------|
| Phenolis liquefacti . . . . . | 60          | fl3ii      |
| Mentholis . . . . .           |             | or         |
| Thymolis . . . . .            |             | āā, gr. xv |
| Collodii, āā . . . . .        | 1           | m. xv      |

M. et sig.: Jelly for toothache.

Or,

| R.                            | gm. or c.c. |           |
|-------------------------------|-------------|-----------|
| Phenolis liquefacti . . . . . | 3           | m. xlv    |
| Capsiei . . . . .             |             |           |
| Pulveris opii, āā . . . . .   | 4           | or āā, 3i |
| Olei caryophylli . . . . .    | 8           | fl3ii     |
| Chloroformi . . . . .         | 75          | fl3iiss   |

M. et sig.: Toothache tincture.

| R.                         | gm. or c.c. |                 |
|----------------------------|-------------|-----------------|
| Chlorali hydrati . . . . . | 5           |                 |
| Camphoræ . . . . .         | 5           | or āā, gr. lxxv |
| Olei caryophylli . . . . . | 10          | fl3iiss         |

M. et Sig.: Rub on the gum, or plug the cavity with cotton saturated with the solution.

## ACUTE INFLAMMATIONS OF THE THROAT

It is now well known that almost every acute inflammation of the pharynx and tonsils is due to one or more germs, the diphtheria bacillus, the streptococcus, the staphylococcus, the influenza bacillus, or the pneumococcus. While the secondary appearance in the throat, after one or more days, is ordinarily distinctive in diphtheria and streptococcus infections, it is not distinctive in the other infections, and may not be in these. Also in the first few hours of the inflammation they are clinically indistinguishable, although bacteriologic examinations may show the germ causing the primary infection. The systemic symptoms also are not distinctive in the primary stages; consequently the attempted abortive local treatment is the same with every throat inflammation. Also, whatever the germ proves to be, and what-



ever the general systemic treatment is, the continued local treatments are not dissimilar.

In primary infection, especially of the tonsils, antiseptic gargles, sprays and applications may abort the disease. This is before the germs have invaded deeply the tonsillar crypts. At this stage Dr. J. L. Goodale, Boston (*Boston Medical and Surgical Journal*, June 25, 1908), has shown that strong antiseptic gargles or sprays are both non-curative and not advisable, as tending to inhibit local leucocytosis and consequently phagocytosis. He also shows the inadvisability and the actual harm that may be caused by attempting to clean out the crypts of dead bacilli and to inject an antiseptic deeply into the parts of the tonsils to which the bacilli have migrated. In a word, he has shown satisfactorily the uselessness and the positive harm from such energetic measures. If such burrowing collections of bacilli can not be combated, and localized suppurations prevented by the leucocytes, we can not prevent such suppuration by local antiseptic applications. It does not seem wise, however, to abolish antiseptic gargles entirely. Such antiseptic mouth washes as are not irritant and do not destroy healthy tissue must tend to keep the infection from spreading from one part to another and to keep it localized. This is certainly observed constantly in practice. We may not prevent an infection developing in the other tonsil, but we can limit it, and under treatment the second tonsil rarely becomes so seriously affected as the region of primary infection.

#### ANTISEPTIC GARGLES

Consequently, every acute primary infection of the throat should be treated with a warm, simple antiseptic gargle followed by a warm, physiologic saline or bland alkaline wash, and this should be repeated at intervals of from an hour and a half to three hours, depending on the character of the infection. There seems to be no doubt that an exceedingly useful antiseptic mouth wash or gargle is a diluted peroxid of hydrogen solution. The official solution (*aqua hydrogenii dioxidi*), which should be fresh, should be diluted with four or five parts of warm water and used as a gargle every three hours, this to be followed in from one to two minutes by a cleansing

solution of either physiologic saline solution ( $1\frac{1}{2}$  teaspoonful of salt to a glass of warm water) or with the liquor antisepticus alkalinus (N. F.), diluted with equal parts of warm water. In an hour and a half after this gargle a boric acid solution of about 2 per cent. should be used as a gargle and mouth wash, and this should be repeated every three hours. In other words, the peroxid (and the cleanser) and the boric acid should alternate every hour and a half during the daytime and every three hours during the night. Such early antiseptic treatment will abort many cases of throat inflammation. And if the inflammation be not aborted, such treatment will cleanse the throat and give mild antiseptics throughout the whole course of the disease. If there is no evident exudate, or if there is considerable pharyngitis, a potassium chlorate solution could be substituted for the boric acid solution, but the antiseptic peroxid of hydrogen should not be omitted. As soon as the infection begins to subside the gargling should be gradually less and less frequent.

---

### CARDIOSPASM

This is a name applied to a spasmodic contraction of the cardiac extremity of the stomach, and is, perhaps, a more frequently undiagnosed condition than has been thought.

Dr. Charles A. Wingerter, of Wheeling, W. Va., in the *West Virginia Medical Journal*, December, 1907, describes this condition. It occurs in "two forms: as a transitory paroxysmal affection lasting a few hours or even a couple of days, or as a chronic condition which may extend over a number of years." The acute cramp is short and painful, and is difficult to diagnose. The chronic type of cardiospasm is a more serious affection, as it interferes with the general nutrition of the patient and soon makes him an invalid.

Wingerter lays stress on the order of the symptoms as diagnostic, viz., early spasmodic pain, later regurgitation, and still later, retention of food a greater length of time after the meal before the regurgitation takes place. The pain comes on suddenly, and often radiates to the back or neck. In the intervals the patient is

apparently well. After some weeks this spasm of the cardia causes a dilatation of the lower end of the esophagus. From this time on the pain, distress and regurgitation are more or less continuous, and emaciation begins. Soft food may still pass through the narrowed cardia, and if enough liquid and soft food is taken, the nutrition may keep fairly good and the regurgitation from the diverticulum may even become less frequent. The reaction of this regurgitated food is always alkaline, it is not acid, showing that it did not come from the stomach.

The cause of cardiospasm may be an ulceration, a new growth, hyperchlorhydria, or hyperesthesia of the mucous membrane at the cardia. This, of course, may occur with neurasthenic and hysterical patients, but is probably often present when patients are considered neurasthenic and may be the cause of the neurasthenia. It occurs in both sexes and at any age.

#### TREATMENT

In the treatment of this condition, of course, if possible all local irritation must be removed, as gastritis or hyperchlorhydria. Some patients have the spasm of this muscle as a neurosis, especially when certain articles of food are eaten, particularly when by some previous experience they have found that such and such a food was followed by this sudden pain and perhaps regurgitation. Such patients need suggestive treatment, as, if the patient can be made not to expect the attack, almost any food may be taken without harm. A spasm being present, morphin or codein will stop it. Antipyrin has been recommended, and some patients do well with bromids. In its primary stage, no tangible cause being found, the patient should be treated as a neurotic. This means institution of any rest cure, change of climate, massage, hydrotherapy or psychopathic treatment deemed advisable.

When the cardiospasm can not be relieved by any of these means and the condition has become chronic, operative dilatation of the cardia must be done, either by esophageal dilators or by opening into the stomach and dilating from below.

## GASTRIC ULCER

Dr. Delancy Rochester, Buffalo, N. Y. (*New York State Journal of Medicine*, April, 1908), believes that patients who have gastric ulcer are always more or less neurotic, as evidenced by headaches, neuralgias, nervousness and hysteria. He finds present in almost every patient with this trouble a disturbance of the lower bowel, either as constipation or a chronic diarrhea, "frequently of the mucous colitis type."

A sharp pain in the region of the stomach, or a pain burning or gnawing in character, often more aggravated when the stomach is empty, at other times the undigested food causing irritation sufficient to produce immediate vomiting and the signs of hyperchlorhydria (which is proved by analysis of the test breakfast), are all symptoms so well understood as to require no detailed description. While the vomiting of blood or the finding of blood in the stools (other causes of the latter having been excluded) is diagnostic, it is not always necessary for hemorrhage to be present in order to make a diagnosis.

## TREATMENT OF HEMORRHAGE

In the treatment of hemorrhage of the stomach, of the greatest importance are physical and mental rest and functional rest for the stomach. In order to quiet the patient, Rochester administers a hypodermatic injection of morphin and atropin "in full dose." He adds the atropin to the injection to overcome the effect which morphin sometimes has of increasing the flow of gastric juice. Functional rest of the stomach is best obtained by withholding all food for a time. Sometimes, although he is not convinced of its utility, he applies a cold coil to the epigastrium. If the symptoms show that hemorrhage is persisting he gives 1 c.c. (15 minims) of a 1 to 1000 adrenalin chlorid solution in 30 c.c. (1 ounce) of distilled water, and follows this in half an hour by from 50 to 100 c.c. (about 2 or 3 ounces) of a 10 per cent. solution of sterile gelatin. He also has obtained good results from the administration of subgallate of bismuth suspended in a gelatin solution, or when hyperchlorhydria is very pronounced, suspended

in milk of magnesia. Of course recurrent hemorrhage calls for surgical interference.

He would withhold food, ordinarily, from forty-eight to seventy-two hours, but if there is excessive hyperchlohydria as shown by severe pain, he would have recourse to immediate feeding of small quantities of milk, diluted with vichy or mixed with milk of magnesia or lime water. Sometimes he gives ice water in teaspoonful doses or allows pieces of ice to melt in the mouth.

During the first twenty-four hours he would not give food even by the rectum, as nutrient enemata have been shown to increase the flow of the gastric juice. The first enemata used should be normal salt solution, and later peptonized milk and egg may be used. These nutrient enemata should be given every six or eight hours, though a small amount of salt solution, 100 to 200 c.c., may be given by the rectum during the interval.

To cure the condition which he thinks caused the ulcer, he would investigate all reflex possibilities, believing that ulcers of the stomach may be brought about by a condition of nerve disturbance, due to nervous reflexes from the eyes, ears, nose, and throat, and to those from the gall bladder, rectum, and other abdominal and pelvic organs. He emphasizes the fact that eyestrain should be cured, and colon fermentation and putrefaction should be prevented, and any hygienic measure that will build up the general health of the patient will prevent the recurrence and promote the healing of an ulcer of the stomach.

#### DIET

As to diet, he would study each patient carefully and decide which particular foods were the best for that particular patient, of course "excluding all coarse-fibered vegetables and cereals, all highly-seasoned foods, fancy dishes, all salted and preserved meats and fish, and usually all soups made from meat stock." He would exclude "beers, ales, wines, and liquors of all sorts, and strong tea and strong coffee. Preserved fruits and pickles," he would exclude, but "fresh fruits, either raw or cooked," he would experiment with and see which caused disagreeable symptoms and which not. He recommends the drinking of a pint of pure water,



or slightly alkaline water, or moderately carbonated water, with each meal, "as it dilutes and partially neutralizes the highly acid gastric juice. Gruels, milk, soups and other foods cooked with milk are useful." Cocoa not too sweet is useful. "White flour bread eaten with unsalted butter" he deems best. Meat should be eaten once daily, in the form "of beef, mutton or chicken." An egg or two once a day, with little or no salt, is advisable, and fresh fish may be taken occasionally. He would give the finer cereals, as "rice, sago, and tapioca (and macaroni cooked with milk), and would use plenty of cream, no salt, and little sugar." Baked and then thoroughly mashed potato, or creamed and then mashed he advises. Milk is, of course, the most valuable article of diet, but it should be diluted with alkaline water. Three or four hours after each meal he would have the patient drink a half pint of such diluted milk or milk porridge, sipped slowly, and taken pleasantly warm; not cold, not hot. The patient should take three meals a day, never overloading the stomach at one time, and not taking too great a variety of food at any one meal. He should eat slowly and chew thoroughly, and "not wash down half-chewed food with drink."

He relieves gastric irritation, flatulence and pain with :

| R.                           | gm. or c.c. |           |
|------------------------------|-------------|-----------|
| Strontii bromidi .....       | 6           | 3i½       |
| Sodii bicarbonatis .....     | 40          | 3ix       |
| Carbonis ligni .....         | 20          | or        |
| Bismuthi subcarbonatis ..... | 20          | āā, 3ivss |
| Magnæ magnesie .....         | 200         | fl. 3vi   |

M. et. Sig.: Two teaspoonfuls, in water, three times a day, after meals. [Shake well.]

If between meals there is burning or pain in the stomach due to hyperchlorhydria, Rochester gives a gastric sedative which he attributes to Stockton, viz.:

| R.                           | gm. |       |
|------------------------------|-----|-------|
| Cerii oxalatis .....         | 10  | 3iiss |
| Bismuthi subcarbonatis ..... | 20  | or 3v |
| Magnesii oxidi .....         | 40  | 3x    |

M. et fac pulverem.

Sig.: A teaspoonful stirred in water, and repeat in an hour, if needed.

The milk of magnesia or the milk of bismuth will often act as well.

## THE LENHARTZ TREATMENT

Dr. Samuel W. Lambert, New York (*American Journal of the Medical Sciences*, January, 1908), describes this treatment and believes that it is an advance in the therapy of this disease. Lenhartz published the results of his treatment in January, 1904, but the treatment did not at first receive the attention that it deserved.

Instead of a starvation period with rectal alimentation, Lenhartz's treatment aims to furnish more nutrition to the patient and improve the general condition and thus favor the healing of the ulcer. It also aims "to prevent distention of the stomach by a limitation of the size of each portion of food taken and of the amount of fluids taken and by the use of ice applications externally." And lastly it aims "to prevent the action of the excessive hydrochloric acid on the ulcer by combining it with food albumin and by the use of bismuth subnitrate internally." These objects are accomplished as follows: By giving the patient nourishment every hour, and this nourishment concentrated and rich in albumin so that "the acid of the gastric juice will be rapidly combined with the food proteid." The food should be slowly and completely masticated, and this is best accomplished by feeding the patient "in teaspoonful amounts and by never allowing him to feed himself during the first two weeks of his treatment." Three or four weeks' rest in bed ordinarily must be insisted on. When there is hemorrhage an ice bag to the epigastrium is recommended, and bismuth subnitrate internally. Iron should be given later for the subsequent anemia.

"The food given should be fresh milk, iced; raw eggs (the whole egg is beaten up and iced). Both the milk and the egg are prepared in covered glass tumblers, surrounded by cracked ice, and kept at the bedside. The feeding spoon is also kept iced in the same manner." If the patient prefers, Lambert allows a mixing of the eggs and milk and feeding the mixture instead of the usual alternation as advised by Lenhartz. After the third day, granulated sugar is added to the eggs. On the sixth day "raw scraped beef, boiled rice and zwieback prepared in the usual manner" are given. Lambert substitutes cooked, chopped chicken for the raw ham in the treatment of Lenhartz. Finally butter is added to

the diet. After the tenth day Lambert allows a broiled chop, beefsteak, or chicken as a substitute for the raw beef. Later ice cream is added and the zwieback is changed to toasted bread, and other cereals take the place of rice. For the first ten days of the treatment the food is given hourly from 7 in the morning until 9 at night. Lambert found advantage in the Lenhartz routine feeding, though, of course, not so long continued, in several patients with hyperchlorhydria who did not have peptic ulcer.

From the recorded experiences Lambert's conclusions seem justified, viz., that while the Lenhartz treatment does not always perfect a cure and should not take the place of surgery when dangerous hemorrhage has occurred or an ulcer is recurrent, it seems to cure a patient more pleasantly than the starvation method; the patients are in better condition after the treatment, as they are really built up by it; there is less need for morphin; there is less vomiting, and apparently less hemorrhage.

---

## TAPEWORM

The frequency with which treatments to eradicate a tapeworm from the intestine are unsuccessful is well known. The cause of this is generally because the intestines have not been thoroughly cleaned; in other words, the intestines, for the best action of the anthelmintic, should be as nearly empty as possible not only of food and the products of digestion, but also of the large amount of mucus which irritation from the parasite has caused.

Consequently, before the anthelmintic is administered, at least two days should be devoted to the preparation of the patient for the treatment. The patient should give up his business and attend to the matter in hand. The diet should be liquid; milk, not more than a quart, beef tea and coffee if he desires. During these two days he should receive a small dose of salts three times a day so that the upper part of the intestines may be thoroughly cleaned. The following is satisfactory:

R. gm. or cc.  
 Magnesii sulphatis ..... 60' ℥ii  
 Spiritus chloroformi ..... 12' or ℥.℥iii  
 Aquæ, ad ..... 180 ad. ℥.℥vi  
 M. et Sig.: A tablespoonful, in water, three times a day, an hour before meals.

If there is much purging, the frequency of the movements may be lessened by an occasional dose of 1/10 of a grain of morphin, the object aimed at being to have the intestinal canal cleaned, especially of mucus, before the anthelmintic is to be administered and at the same time not to prostrate the patient too much.

At bedtime the evening before the specific drug is to be administered the patient should receive two tablespoonfuls of the above magnesium sulphate mixture. If this has not acted well by 8 o'clock the next morning, the same dose should be repeated.

The male fern should be given as follows:

R. gm.  
 Oleoresinæ aspidii ..... 4' or ℥i  
 Fac capsulas, 8.

Sig.: Four capsules, with half a glass of hot water at 9 a. m., and four capsules, with hot water, at 10 a. m. [Important: Before taking the above capsules each one should be uncapped.]

At 12 o'clock three tablespoonfuls of the magnesium sulphate mixture should be taken to insure the rapid passage of the male fern through the intestine lest too much absorption take place.

During this morning no nutrition should be taken other than black coffee, clear tea, or bouillon.

Except when momentarily otherwise engaged, the patient should be in bed, and should stay in bed the remainder of the day. For unavoidable faintness brandy may be administered at any time, or a hypodermatic injection of strychnin may be given. After 1 o'clock any food may be given the patient that he desires.

During the three or four hours of this active treatment, viz., from 10 a. m. to 1 or 2 p. m., the physician should remain with the patient, or a thoroughly trained nurse should be in attendance.

The stools should all be passed into receptacles where they can be thoroughly strained afterward in order that the parasite's head may be sought, and if the above treatment is carried out it will generally be found.

Schilling, in the *Therap. Monats.*, April, 1908, gives his treatment, which is as follows:

| R.                       | gm. or c.c. |           |
|--------------------------|-------------|-----------|
| Oleoresinæ aspidii ..... | 8           | 3ii       |
| Pulveris jalapæ .....    | 50 or       | gr. viiss |
| Syrupi .....             | 30          | fl.3i     |

M. et Sig.: Take one-half, with water, at the time directed, and the remainder in half an hour. [Shake well.]

Schilling advises the administration of a cup of black coffee fifteen minutes before the administration of the male fern. For the next few hours the patient should fast, and if the worm is not expelled in three or four hours he advises an enema of a quart of warm water.

The above dose of male fern is large, and it would seem wise to give a saline cathartic, two hours after the first dose of it, to hurry its exit from the body, lest too much absorption should occur.

Dr. Seymour Spier, of New Haven, Conn., has had almost constant success with pomegranate. An unpublished letter from this physician thus describes his exact method of procedure: He first prepares a decoction from 60 grams of fresh pomegranate bark to 500 c.c. of water, slowly boiling this down to 250 c.c. (2 ounces of the bark to a pint of water, boiled down to half a pint). On the day before the administration of the anthelmintic the patient is given a cathartic, a good dose of compound licorice powder or other efficient purgative, in the morning. He is allowed breakfast and noon meal as usual. The supper, or evening meal, should consist of bread, or crackers, in milk. Before retiring he is given a soap suds enema, and at 6 a. m. the next morning, the morning of treatment, he is given half, viz., 125 c.c. (4 ounces) of the half-pint of the prepared pomegranate decoction. Half an hour later he is given a tablespoonful of castor oil, and in another half hour the patient takes the remainder (125 c.c., or 4 ounces) of the decoction. In thirty minutes this is followed by two tablespoonfuls of castor oil. The oil may be given in lemon juice on cracked ice, or on black coffee. If the oil is positively objectionable, instead of it, forty-five minutes after the administration of the last dose of pomegranate decoction he may be given a dose of salts, or even a bottle of the pleasant tasting effervescing citrate of magnesium. In a few hours the patient al-



most invariably passes the worm, as a whole with head attached, without any prolonged griping or very frequent movements. The patient is then immediately ready for his breakfast or luncheon.

If previous examination of the segments of the worm has shown it to be of the pork variety (*Tania solium*). Spier adds one drop of croton oil to the last portion of the decoction.

As the above decoction is bitter, and sometimes nauseating to the patient, and as a concentrated preparation of the alkaloids of the pomegranate is made especially for the treatment of tapeworm, and can be obtained, it may be ordered. It is much pleasanter to take and as effective as the crude drug. In fact, Spier says he has found it difficult to obtain fresh, active pomegranate bark, and to be successful the drug must be active.

The only disagreeable symptoms that occur from the administration of pomegranate in the above dosage is that there may be dizziness, and sometimes a partial amblyopia, which lasts from five to fifteen minutes. This is never serious, soon passes off, and is generally dispelled by a dose of whiskey or brandy.

Pomegranate (*Granatum*, U. S. P.) occurs as a bark which contains, besides about 25 per cent. tannic acid, several alkaloids, the most important of which are pelletierin and isopelletierin (sometimes called isopunicin). These alkaloids have some action similar to atropin, hence probably the effect on the eyes. If toxic doses be administered, or if large doses remain long in the gastrointestinal canal without being pushed rapidly along by cathartics, not only would dizziness and amblyopia be caused, but there would be bowel cramps, nausea, vomiting, and there might be muscle cramps, especially in the legs.

If the alkaloids be carefully prepared, the official preparation of pelletierinæ tannas, which is a mixture of the alkaloids of the pomegranate, should be an efficient preparation. The dose listed in the Pharmacopœia is 0.25 gram (4 grains).

Dr. Spier has never seen serious or persistent unpleasant symptoms occur from the administration of pomegranate as he has described it.

## ENTEROCOLITIS OF YOUNG CHILDREN

## DIETETIC TREATMENT

Dr. John L. Morse, Boston, in the second paper of a symposium which appeared in the *British Medical Journal*, Oct. 13, 1906,\* discusses the dietetic treatment of this disease, and states that the object aimed at is "such an arrangement of the food as will starve the bacteria without starving the baby." In other words, the baby must receive a reasonable amount of nourishment of such a food as will be a poor culture medium for bacteria.

In the beginning of the treatment total abstinence should be ordered, the length of time depending on the condition of the patient; all the babies can stand twenty-four hours without nutriment, most of them standing forty-eight, provided that they are given a sufficient amount of water. They must receive as much water in twenty-four hours as they normally would get in their food, and the amount of water must be carefully prescribed. If the baby takes the water willingly by the stomach and it is retained, that method of administration is sufficient. If it is not retained, it must be injected into the colon by means of a tube, and if it is not retained by the colon he advises administration of physiologic salt solution subcutaneously, the amount thus injected being from two to six ounces, depending on the age and size of the infant. It is useless to repeat such an injection until the previous one has been thoroughly absorbed. The administration of water in one of the above methods is absolutely necessary for the life of the patient. The amount of water lost by vomiting and purging if not replaced so depletes the blood as to cause the retention of toxins, the inhibition of kidney function, and paralysis of the circulation.

The first food given after from twenty-four to forty-eight hours should be a weak, diluted nutriment. Morse believes that it is not generally recognized how little nutrition is contained in barley water, which "as usually prepared contains only about 0.05 per cent. of fat, 0.25 per cent. of proteid and 1.5 per cent. of starch, and thus contains only one-tenth as much nutriment as milk. The white of one egg is equal in nutritive value to only three-fifths of an ounce of milk, while beef juice contains 0.6 per cent. of fat, and 2.9 per cent. of

proteid, giving a nutritive value, bulk for bulk, of only one-fourth as great as milk. Broths contain only about 1 per cent. of proteid, and hence have a minimum nutritive value." Therefore, many times a very much diluted milk will be as valuable for nutrition, and may not cause any more disturbance of digestion than do these substitutes.

In selecting a substitute for milk one should endeavor to select one in which the germs present do not readily thrive. While a scientific examination can not often be made, "a clinical rule of some value is that sour stools mean bacteria which thrive on sugars and starches, and foul stools those which thrive on proteids." Morse finds that in these conditions of foul stools the babies do better on starches and sugars than on proteid foods, and he generally selects barley water and milk sugar. When proteids are indicated, the white of egg in the form of albumin water, beef juice, and broth may be used. He cautions that whatever substitute for milk is used, the amount of liquid must be kept up to the required limit, just as during the starvation period.

It is seldom wise to return to a milk diet until the temperature and the movements have become normal. However, after the baby has been sick a week it may be necessary to give some form of modified and pasteurized milk, even if the disease has not stopped. Too much alkali should not be given either medicinally or in the food, as it will retard the formation of the chyme for nutrition and healthy intestinal digestion. In the beginning of the return to a milk diet he finds milk whey often valuable. "It contains about 1 per cent. of proteids and 5 per cent. of sugar." He also has lately found that pasteurized buttermilk is a good initial milk food. Buttermilk contains very little fat, a moderate amount of sugar, a considerable amount of proteids, and lactic acid, and also contains lactic acid bacteria. He has pasteurized this milk, but is not even sure that pasteurization is necessary, as the advantages of buttermilk as a bowel antiseptic have lately been lauded.

When the baby shows no sign of improvement and is gradually failing in spite of all medicinal, dietetic and hygienic treatment, a wet nurse should be considered, as patients have been saved by such natural nutrition.

# MEDICINAL TREATMENT

Dr. L. E. La F6tra of New York completed the discussion on enterocolitis by presenting the medicinal treatment of the disease. He cautions against too warm covering for the child, believing a light, porous-meshed material or light flannel is the best clothing. This allows evaporation and radiation from the surface of the body. Stools and diapers should be scrupulously disinfected. The baby should be placed on a cot, if possible, where dry, cool air can be obtained. A veranda, balcony or tent should be used, if the baby can not be moved out of the city. He well says that Nature should not be impeded in her methods of curing this disease, but, on the other hand, she is just as poor a physician as she is "a botchy surgeon."

The two indications presented for medicinal aid are "to promote elimination and to allay inflammation." He thinks that the most valuable eliminator is an alkaline cathartic, such as Glauber's, Epsom or Rochelle salt, and prefers the sodium sulphate (Glauber's) for the younger patients. Of course, any saline should be used with care when the baby is under nine months of age, and not at all when the patient is depressed, with sunken fontanelle, low temperature, and there is evidence of great need of water. In such a condition of depression he prefers to use calomel and castor oil, together with colon irrigations and occasional lavage of the stomach. To the patients without depression he would give the salt every half-hour for four or five doses; "to an infant of nine months the dose is 10 grains (0.65); to a child of two years, 20 grains (1.30), in a teaspoonful of water." For older children he thinks that Epsom salt may be better, especially if "there are dysenteric stools with much blood." He does not say why.

For a child nine months old:

| R.                |       | gm. or c.c. |           |
|-------------------|-------|-------------|-----------|
| Sodii sulphatis   | ..... | 5           | 5iss      |
| Syrupi zingiberis | ..... | 10          | or fl5iii |
| Aquæ              | ..... | ad 50       | ad fl5ii  |

M. et Sig.: A teaspoonful, in water, every half-hour for four or five doses.

Or:

| R.   | gm. or c.c. |           |
|--|-------------|-----------|
| Sodii sulphatis .....  | 10          | 3iii      |
| Syrupi rhei aromatici.....   | 10          | or fl3iii |
| Aquæ .....   | ad 100      | ad fl3iv  |
| M. et Sig.: A teaspoonful, in water, every half-hour for four or five doses. |             |           |

For a child two years of age:

| R.   | gm. or c.c. |         |
|--|-------------|---------|
| Sodii sulphatis .....  | 10          | or 3iii |
| Aquæ cinnamomi .....   | 50          | fl3iii  |
| M. et Sig.: A teaspoonful, in water, every half-hour for four or five doses. |             |         |

Or:

| R.   | gm. or c.c. |         |
|--|-------------|---------|
| Magnesii sulphatis .....   | 10          | or 3iii |
| Aquæ menthæ piperitæ.....  | 50          | fl3iii  |
| M. et Sig.: A teaspoonful, in water, every half-hour for four or five doses. |             |         |

He says that these saline laxatives are not apt to be vomited, and the bowels are cleared out more rapidly and more effectually than by calomel or castor oil, and "the watery stools flush out the ileum and colon, syphon out the toxins, and hence reduce the temperature."

When vomiting is persistent and even these salts can not be retained, he gives calomel dry on the tongue, in divided doses.

| R.                             | gm. |          |
|--------------------------------|-----|----------|
| Hydrargyri chloridi mitis..... | 106 | or gr. i |
| Sacchari lactis .....          | 1   | gr. xv   |
| M. et fac chartulas 10.        |     |          |

Sig.: One powder dry on the tongue every half-hour.

He believes that castor oil has its best use in the late stages of the disease, and he then gives it in small doses in conjunction with bismuth. He does not mention the exact dose. The bismuth may be given as follows:

| R.                          | gm. |          |
|-----------------------------|-----|----------|
| Bismuthi subnitratiss ..... | 10  | or 3iiss |
| Fac chartulas 20.           |     |          |

Sig.: A powder, administered in a teaspoonful of barley water or other nutriment, every three hours.

Elimination through the skin should be encouraged by frequent bathing, at least twice daily, using warm water unless there is high temperature. He would use



soap and water to cleanse the skin of a patient showing much toxemia so as to clean out the secretion from the sweat glands and aid the skin to act properly.

He believes that weak tea makes a splendid mild stimulant and slightly astringent drink. The high colon injection, not only for irrigation purposes, but to leave some salt solution in the colon for absorption, is commended. To the normal saline solution he would add a little bicarbonate of soda. The solution may be used hot or tepid, or even a little cooler than the body, depending on the temperature of the patient, and if necessary he would give such irrigations twice in twenty-four hours, especially if the patient were toxemic, unless the child should become nervously excited or wearied by the procedure. He thinks that bowel irrigation has been overdone, and therefore does not commend it to reduce the frequency of the movements of the bowels, except when there is mucus coming from the colon, with considerable rectal tenesmus. Even in this condition he would not give irrigations more than once a day unless, as above stated, it should be necessary to cause the absorption of water by injecting solutions for that purpose into the colon.

As a physiologic antidote to toxins in the system he recommends atropin, and gives it hypodermatically in 1/1000 of a grain doses every two hours until there is physiologic effect as shown by dilatation of the pupil and flushing of the face. He finds that dilute hydrochloric acid added to the food or the drinking water, as recommended by Jacobi, is often a help in obtaining digestion of the nutriment given.

|                                 |             |         |
|---------------------------------|-------------|---------|
| <b>R.</b>                       | <b>c.c.</b> |         |
| Acidi hydrochlorici diluti..... | 25          | or flʒi |

Sig.: Two or three drops, in water, after proteid nutrition.  
[Hydrochloric acid would not be indicated with starch foods.—Ed.]

For general stimulation, if the child is not vomiting, he uses the tincture of nux vomica or tannate of quinin, as:

|                            |             |           |
|----------------------------|-------------|-----------|
| <b>R.</b>                  | <b>c.c.</b> |           |
| Tincturæ nucis vomicæ..... | 15          | or        |
| Aquæ .....                 | ad 30       | āā, flʒss |

Sig.: One drop every four hours, for a child one year of age.

If there is vomiting, or if more stimulation is required, hypodermatic injections of strychnin in 1/300 of a grain dose (0.0002) should be used in place of the above. He also uses injections of camphor oil, which may be given as the saturated solution of camphor in sterile and filtered olive oil.

As soon as the temperature has fallen, the digestive tract seems clean and the toxemia is lessened, he administers a powder to soothe and heal the inflamed intestinal mucous membrane, and uses chalk, magnesia, zinc oxid or bismuth, as:

| R.                         | gm. |    |          |
|----------------------------|-----|----|----------|
| Bismuthi subnitratis ..... | 20  | or | 5v       |
| Zinci oxidi .....          | 5   |    | gr. lxxv |
| M. et fac chartulas 20.    |     |    |          |

Sig.: One powder every two hours.

This powder may be given in a teaspoonful or two of nutriment, as above suggested. He does not use salicylate of bismuth, but often adds salicylate of soda or creosote.

It would seem much better, if salicylic acid is to be used or if creosote is advisable, to give the combination of salicylic acid and phenol as salol, which cannot and does not disturb the stomach; as, for a child two years old:

| R.                         | gm. |    |       |
|----------------------------|-----|----|-------|
| Bismuthi subnitratis ..... | 10  | or | 5iiss |
| Phenylis salicylatis ..... | 2   |    | 3ss   |
| M. et fac chartulas 20.    |     |    |       |

Sig.: One powder every three hours.

Instead of any other tannic or gallic acid preparation, he often uses the subgallate of bismuth, and uses it in the same dosage as the bismuth subnitrate, which seems too large. He advises the use for some time of these large doses of bismuth, and certain it is that large doses are needed to coat and soothe the whole intestine. On the other hand, bismuth should not be used too long, as it tends to form concretions and scybalous masses, which may prolong the inflammation and irritation beyond what would occur had bismuth not been administered in such amounts.

| R.                         | gm. |    |       |
|----------------------------|-----|----|-------|
| Bismuthi subgallatis ..... | 10  | or | 3iiss |
| Fac chartulas 20.          |     |    |       |

Sig.: A powder every three hours.

If in spite of the powders the stools continue too frequent, the bowels moving after every feeding or after every drink of water, he advises the use of opium, but does not think it should be used during the period when there is marked toxemia, as he believes that bowel drainage is the way that serious toxemia is prevented. Later, when the inflammation persists and acute toxemia is not present, he uses opium in some form, as Dover's powder, or paregoric, as:

|                                   |     |            |
|-----------------------------------|-----|------------|
| R.                                | gm. |            |
| Pulveris ipecacuanhæ et opii..... | 20  | or gr. iii |
| Bismuthi subgallatis .....        | 10  | 3iiss      |

Sig.: One powder after each loose movement, unless the child is very drowsy.

Or:

|                               |      |         |
|-------------------------------|------|---------|
| R.                            | c.c. |         |
| Tincturæ opii camphoratæ..... | 25   | or flʒi |

Sig.: Ten drops, in water, after each loose movement, unless the child is drowsy.

When children vomit badly he would give morphin hypodermatically, as 1/100 of a grain (0.0006). Of course, it is understood that the above doses should be increased or diminished, depending on the age or weakness of the child. Like many other drugs, the dose of opium when used for children should be enough and not too much, and this is safely decided by the amount of drowsiness, the dose being not more frequent than once in two hours. The deodorized tincture of opium is one of the best preparations in which to administer opium to a child. The dose for a child two years old should be one drop every two or three hours, increased or diminished depending on the results. Acute pain and frequent movements of the bowels should not be allowed when opium will control it, although as so well stated by La Fétra, in the beginning of the disease the toxins should not be locked up in the intestines by opium.

When the fever is high, La Fétra uses hydrotherapy and fanning until the temperature comes down to 100 F. He uses lavage of the stomach and colon, irrigations of the bowel, with ice to the head and heat to the extremities, if the symptoms call for such treatment. He cautions against too long continued colon irrigations as keeping up mucous discharges, and advises gen-

eral tonic treatment in protracted cases. He would keep up the bismuth, which, however, in our opinion should not be too long continued. If there are frequent, small, bloody stools, he finds high irrigations of a gelatin solution of advantage, or an injection of a weak suprarenal extract solution, or a 10 per cent. solution of one of the organic compounds of silver, used once a day for three or four days. If there is great bowel distention due to paralysis of the intestines, he puts a little turpentine into the irrigations and applies turpentine stupes to the abdomen, and gives strychnin hypodermatically.

Owing to the age of the patient and the great tenderness of the skin it would seem that the same object of pleasant warmth to the abdomen could be obtained with a spiced poultice, or even with a flaxseed poultice, care being taken not to put too much weight on the abdomen. If there is much rectal tenesmus, he finds irrigation with a demulcent, as starch paste or a bland oil, or of a gelatin solution, of advantage. Suppositories are not well retained by young children. If the rectum is prolapsed he advises anointing it with a 5 per cent. cocain ointment. Owing to the uncertainty of the amount of cocain that may be absorbed, the use of cocain in a child likely to become collapsed seems inadvisable.

---

### TROPICAL DYSENTERY

Dr. R. J. Blackham, in the *Lancet*, Dec. 1, 1906, discusses the nature and treatment of this disease. He defines dysentery as: "An inflammation of the large bowel, associated with pain, tenesmus, some slight pyrexia, and a large number of stools, consisting of mucus or mucopus, with micro-organisms but with or without blood. Blackham thinks that it is important to remember that dysentery may be present without any blood in the stools. Predisposing causes to dysentery seem to be age, occupation, condition and environment. Young children and old people seem to be especially liable to contract dysentery. This is probably because they are less sturdy and less able to throw off the infection. It has been asserted that farmers are more likely to contract the disease than those who work indoors, while workers over furnaces, or in high temperatures, such as

stokers and cooks, are likely to contract it. As to the "condition" being a cause, certain it is that anything that diminishes the vitality of the patient, and especially unhygienic surroundings tending to debilitate the patient, predispose to the disease. Overfed or underfed individuals are predisposed, in certain localities, to dysentery, and, of course, diseased or putrid or unripe articles of food may form the culture ground for dysenteric bacteria. A sudden chilling of the body may be an exciting cause.

The two forms of dysentery are amebic, generally a slow chronic condition, although there may be acute attacks, and bacillary dysentery, or the dysentery caused by a specific bacillus. This latter occurs generally as an epidemic, and the specific bacillus that is its cause has been described by various bacteriologists.

#### TREATMENT

Blackham divides the treatment of this disease into that of the acute and chronic forms. The indications in the treatment of the acute form are, to relieve the pain, to avoid irritating the inflamed intestinal mucous membrane, to promote intestinal antisepsis, and to maintain the patient's strength.

To meet the first indication nothing can compare with opium or morphin. The best method is probably to administer the morphin hypodermatically in dose and frequency to stop the pain and quiet the tenesmus. Some writers, however, advise the administration of opium as an enema, and Yeo recommends the administration of 1 c.c. (15 minims) of the tincture of opium (laudanum) in 30 c.c. (1 ounce) of cold liquid starch solution.

To meet the second indication, all food should be avoided that leaves a residue which could irritate the inflamed bowels, hence milk is generally not a proper diet for dysenteric patients, although recommended by many writers. Whey, broths, egg albumin, rice water and barley water make useful diets. If milk is used it should be boiled and diluted with an equal part of barley water and rendered alkaline by the addition of 0.30 gram (5 grains) of sodium bicarbonate or 30 c.c. (1 ounce) of lime water to each pint. If undigested curds



of milk appear in the stools the milk should be peptonized or other food substituted.

The third indication is to attempt to produce intestinal antisepsis. This is best done, says Blackham, by saline aperients which sweep all foul accumulations and organisms from the intestinal tract; by the administration of certain drugs said to be specific; and by washing out the lower bowel with astringent and antiseptic fluids. In the tropics, he states, castor oil is the best preliminary treatment, and the dysentery may be checked by such immediate purgative treatment if combined with rest and a non-irritating careful diet for a few days. The best subsequent saline laxative is:

| R.                           | gm. or c.c. |            |
|------------------------------|-------------|------------|
| Magnesii sulphatis .....     | 40          | 3x         |
| Tincturæ zingiberis .....    | 10          | or fl̄iiss |
| Acidi sulphurici diluti..... | 3           | m. xlv     |
| Aquæ chloroformi .....       | ad 150      | ad fl̄3v   |

M. et Sig.: A tablespoonful, in water, every hour as directed.

Or:

| R.                    | gm. or c.c. |       |
|-----------------------|-------------|-------|
| Sodii sulphatis ..... | 40          | or 3x |
| Aquæ fœniculi .....   | 150         | fl̄3v |

M. et Sig.: A tablespoonful, in water, every hour, as directed.

“A tablespoonful of either one of these preparations should be given every hour until the movements of the bowels become fecal, and then every three or four hours for one or two days. If the stools become watery and do not become fecal, the saline treatment should be stopped and ipecac treatment resorted to.”

The so-called specific treatment of bacillary dysentery or tropical dysentery is that with ipecac. The method of using ipecac in India is, after withholding all nutriment for three hours, to give opium in some form, perhaps best hypodermatically, as an injection of morphin, and half an hour after to give 2 grams (30 grains) of powdered ipecac.

| R.                         | gm. |          |
|----------------------------|-----|----------|
| Pulveris ipecacuanhæ ..... | 10  | or 5iiss |
| Fac konseals, 10.          |     |          |

Sig.: Take two wafers, with a small amount of water, at time directed.

The patient should then lie perfectly quiet and be cautioned not to swallow his saliva, and not allowed to drink any water, and not allowed even to talk. The hypodermic dose of morphin previously given will generally prevent the patient from vomiting the ipecac, and if it is not vomited in about two hours it will have passed into the intestine and the nausea will have ceased. Blackham neglects to state the frequency with which this ipecac should be repeated, but, as generally advised, it should be given in diminishing doses on succeeding days for at least three or four days.

The lavage treatment of dysentery is really only applicable when the disease is subacute or chronic, although cleansing of the lower bowel with plain warm water or warm boric acid solution (a tablespoonful of the boric acid to a pint of water) is sometimes advisable and good treatment, even in the acute form. The disadvantage is the pain which a rectal tube may cause, but a well-oiled small tube or large catheter may be passed, often, almost painlessly, and the soothing, cleansing solution used with gentle pressure, the reservoir not being held too high, will sometimes relieve the tenesmus and prevent movements of the bowels for hours. Blackham also omits speaking of small injections of ice water into the rectum. These also are sometimes valuable in relieving tenesmus and preventing the frequent small movements.

Blackham speaks of the advisability, in malarial regions, of administering quinin in conjunction with the other treatment for dysentery, and believes that in malarial districts it is advisable to administer considerable quinin before the ipecac treatment is begun. When dysentery patients have been deprived of fresh fruit and vegetables for considerable periods, and perhaps have become scorbutic, lime juice or lemons should be administered.

The most important thing in the treatment of acute dysentery is the maintenance of the patient's strength, and hence there must be the greatest care in the selection of the most nutritious food that furnishes the least bulk to reach the intestine. Blackham does not speak of the advisability of using the expressed juice of beef or strong beef extracts, but many times they are of great

advantage and almost a necessity in combating the prostration from this disease.

Warm applications to the bodies of patients who are not feverish and who tend to be cold is an essential factor in preventing collapse. Caffein in the form of black coffee, or as a drug, is spoken of, as:

|                        |   |     |     |
|------------------------|---|-----|-----|
| R.                     |   | gm. |     |
| Caffeinæ citratæ ..... | 2 | or  | 5ss |
| Fac capsulas 20.       |   |     |     |

Sig.: One capsule every six hours.

Strychnin is not mentioned by Blackham, and should perhaps be avoided, if possible, as tending to increase peristalsis, but in conditions of collapse must, of course, be administered, as should, perhaps, atropin.

He speaks of spartein being used with success. Spar-tein is, however, rather a doubtful circulatory stimulant.

If alcohol is needed it is best used in the form of brandy or champagne. When the temperature is low and the patient feels cold, small doses of brandy, not sufficient to cause cerebral stimulation nor too much vasodilatation, may dilate the surface blood vessels sufficiently to cause a feeling of warmth to the patient and the relief of internal congestions. While not indicated in collapse, it may prevent collapse from occurring by the action just stated. It also has a food value, although alcohol is by no means always indicated in dysentery.

For the treatment of chronic dysentery Blackham quotes Manson's treatment as advisable, viz.: "The administration of 30, 25, 20, 15, 10 and 5 grain doses of powdered ipecac on successive evenings, with rest in bed and a milk diet. He then gives a short course of small doses of castor oil, with or without opium, three times daily, regulating the dose according to the catharsis produced." If this treatment is not successful, he gives an intestinal antiseptic, such as salol (phenylis salicylas) or betanaphthol. If this treatment fails, the resource is then local applications to the mucous membrane of the lower bowel, and nitrate of silver injections are considered the best, although solutions of quinin are considered by Osler the best in amebic dysentery. The method of procedure is as follows: A cathartic dose of castor oil having thoroughly operated, the large bowel is washed out with a boric acid solution (a tablespoonful

to a pint), and then about 1,500 c.c. (3 pints) of a 1 to 1,000 to 2 to 1,000 solution of nitrate of silver is passed into the colon. The only pressure used should be that of gravity. Blackham advises directing the patient to retain this injection as long as possible. As the action of nitrate of silver is speedy, and prolonged action and absorption are undesirable, it is much better that this liquid be allowed to flow out in a few minutes after the injection, in fact, it has been advised if the nitrate of silver solution does not quickly return that a sodium chlorid solution be injected to precipitate the nitrate of silver as an insoluble chlorid. This is rarely necessary, however, as peristalsis is caused by the nitrate of silver irritation and the liquid is generally quickly evacuated. This injection of nitrate of silver should be repeated once in four days, if it causes improvement.

It should be remembered that dysentery is a preventable, bacterial disease, and that the organisms may live on clothing for at least three weeks and maintain their virulence in damp soil for months. These germs, however, are readily destroyed by heat or by weak solutions of bichlorid of mercury or weak solutions of phenol. Hence it is inexcusable not to prevent the infection of others by proper disinfection of all the excretions, the bed clothing, and the utensils used about the patient. The room of a dysenteric patient should be thoroughly screened from flies. Blackham also well points out the necessity, when dysentery is epidemic, or in regions where dysentery is frequent, or in patients who have possibly acquired dysenteric contamination from travel, that the stools, even in apparently simple diarrheal cases, should be bacteriologically examined, and from the knowledge thus obtained the individual patient will not only be properly treated, but others may be saved from infection.

---

### INDICANURIA

The formation and absorption of intestinal toxins due to fermentation and putrefaction of maldigested foods, and largely, at least primarily, caused by a sluggish action of the bowels and consequent constipation is understood by all, but it is not frequently enough nor seriously enough considered as a cause of general bad

feelings. These toxins doubtless vary in kind as well as in the symptoms which they cause. These symptoms may be headaches; disinclination to do mental work; sleeplessness, or sleep disturbed by dreams; coated tongue; loss of appetite; various kinds of neuralgias or joint pains; myalgias; muscular weakness or debility; a tendency to dry skin on the one hand, or to sweatings on the other; itchings; fornications; urticaria, and irritability of the bladder.

An indication of the intestinal condition can readily be obtained by an examination of the urine for indican, but this examination is too often omitted. There can be constipation without indicanuria, and there can be indicanuria when there are frequent movements of the bowels. It would seem, then, advisable to examine for indican the urine of patients who are vaguely miserable, or do not feel well, and yet have no tangible illness. A simple, easy office method is as follows:

Place in an ordinary test tube 1 c.c. (15 minims) of chloroform, then fill the test tube half full with equal parts of the urine to be tested and concentrated hydrochloric acid. To this add slowly, shaking meanwhile, the official solution of peroxid of hydrogen. If indican is present, the mixture more or less rapidly assumes a bluish color, which will be taken up by the chloroform. If the test tube is allowed to stand for a few moments, and show as a blue mass at the bottom of the test tube. The intensity of this blue color will denote approximately the amount of indican present. The bluer the chloroform segment in the test tube, the greater the amount of indican.

It is the liver which generally prevents both normal and abnormal products of digestion from reaching the general circulation in such form as to cause toxic irritations or poisonings. If the liver is repeatedly or continuously disturbed in its function by efforts to render innocuous an abnormal amount of these toxins it sooner or later becomes irritated and congested to the extent of doing this work imperfectly, and then these toxins reach the general circulation and cause symptoms.

Abnormal fermentation or putrefaction having been diagnosed as taking place in the intestines, the indications for treatment are, of course, calomel, at least once.



followed by a saline, and the saline is perhaps well repeated on one or two successive mornings, or perhaps once a week for some time. The diet needs generally to be modified, and especially should meat be abstained from temporarily, or at least limited to once a day. Such restrictions of diet need not be long continued if there is no organic reason. Three small doses a day of salol (phenylis salicylas), each perhaps 0.30 gram (5 grains), will aid in inhibiting the fermentation in the intestines.

It has been noted that massage of the abdomen, especially of the liver, and electrical applications to the abdomen (Albert Abrams, *Medical Record*, April 25, 1908) will increase the amount of indican in the urine, if indican was previously present. This shows that the intestines and liver harbor indican. A day or two after such massage the urine, if the diet is corrected, will be free from indican.

---

## CONSTIPATION

That ever-troublesome condition can not be too frequently discussed, as not only the laity, but the profession seem to fail to recognize its importance as a predisposing and primary step to more serious conditions. The layman and the layman's parents allow the condition to develop, and the physician gives either drugs, or a little advice and drugs, when he should give very few drugs and very much advice.

Dr. B. K. Ellis, of Greeley, Colo., in the *Therapeutic Gazette*, September, 1908, offers many valuable suggestions for the management of constipation. He well says that "a careful analysis and accurate diagnosis of each causal factor is essential to the intelligent treatment of this symptom" or condition. As has been so frequently pointed out, he says "the consumption of highly seasoned foods and a close attention to social or financial duties with the consequent neglect of the calls of Nature are largely the starting point of chronic constipation." If the reflex indication which fecal matter in the rectum gives is neglected, such reflexes either become less and less acute, or finally may be lacking, and fecal matter accumulating dilates the rectum. Then it is only by

strenuous muscular effort, or by excessive dilatation with enemata, that movements are obtained.

Constipation may be caused by the taking of food that is so completely digested as to leave insufficient residue to act as a stimulus to intestinal peristalsis. On the other hand, large amounts of indigestible substances may be taken and, dilating the walls of the intestine, in time cause atrophy and consequent constipation. Either of these conditions being diagnosed as an etiologic factor in the constipation, the proper treatment suggests itself.

If the contents of the upper intestine are rapidly digested and peristalsis is abnormally slow, the water from the intestine may be too completely absorbed, the intestinal contents become less fluid, and sluggish passage of the contents of the gut is the consequence. Also, if large amounts of liquid are passed by the kidneys, or if the person sweats profusely and insufficient water is taken into the system, the water from that reason is absorbed from the intestines and constipation is the result.

If constipation is the only condition present it should be readily corrected if the causes are once known and the antidote ordered. If constipation is a symptom of another condition, or a coincident condition added to the disease or condition that is present, its treatment may not be, of necessity, the best for the constipation, but must be, perhaps, modified by the treatment necessary for the disease or concomitant conditions.

#### TREATMENT

The most important part of the treatment is the correction of the dietary of the patient, and generally the patient needs food that leaves more cellulose for the intestinal muscles to act on. This means plenty of vegetables. Fruits should be given freely, except the astringent fruits. The amount of water taken depends on the patient's habits and the condition of the circulation. A patient who is muscularly active should drink more water than the one whose life is sedentary. A glass of cold water drunk in the morning while dressing is a great help to a physiologic movement of the bowels.

directly after breakfast. The morning coffee is also a stimulant to peristalsis.

The patient should go to stool every morning at the same hour whether the desire is present or not, and should attend to the matter at hand, and, as Ellis says, should not read for diversion.

Abdominal massage, calisthenics, regulated exercise, walking, rowing, riding, golf playing, or any other muscular exercise that seems advisable should be ordered for the patient of sedentary habits, and it must be urged on him that if the habit of constipation is not now cured the future promises intestinal indigestion, dyspepsia, imperfect action of the liver, imperfect bile, nervous irritations, kidney irritations, and early cardiovascular-renal disease, i. e., arteriosclerosis, weakening of the heart, and chronic interstitial nephritis.

Also it is certainly the fact that a patient who has been long constipated and suffering from more or less chronic toxemia, as shown by dull headaches, sallow skin, coated tongue and poor digestion can not possibly withstand acute diseases, or operations that may be necessary, as well as a patient who has not had a long habit of constipation. In other words, a daily normal movement of the bowels is an asset so far as future health emergencies are concerned, the same as is a heart that has not been damaged by tobacco.

Before any severe exercise or any abdominal massage is ordered, or advised, a careful abdominal examination should be made and the physician assured that there is no inflammatory conditions present, as chronic appendicitis, gall-bladder disturbances, pelvic or other disturbances.

Ellis applies "manual massage to the abdomen from fifteen to twenty minutes, beginning with light, circular stroking of the abdomen about the umbilicus, first having lubricated well the parts with olive oil; these strokes are gradually widened and pressure increased until the course of the colon is being massaged deeply, all fecal masses broken up and moved down toward the rectum." When massage is deemed inadvisable or inconvenient, faradic electricity may be used. Ellis places "a large electrode over the lumbar or sacral spine and the other is moved over the abdomen, stroking from

right to left." He advises "the interruption of the current from two to six times a second, and the duration of the seance and strength of current depend on the results and sensations of the patient."

If ordinary means and methods fail to cure the constipation, it will often be found that the anal sphincter is very tight and does not relax properly, so that, when fecal matter is in the rectum, its evacuation is almost impossible. With this condition of the sphincter present the rectum is often found greatly dilated. Forcible dilatation of the sphincter and under an anesthetic, or its gradual dilatation with bougies or water bags, is generally advisable.

A not infrequent, though often undiscovered cause of constipation is overdevelopment of the semilunar valves or the valves of Morgagni. These hindrances to the passage of fecal matter, situated just above the external sphincter, are amenable only to surgical intervention, which procedure, however, is easily accomplished with satisfactory results.

If the patient has a habit of using daily large rectal enemas, almost irrigations, or taking large quantities of water and retaining it for a time, dilatation of the rectum and of the sigmoid flexure, and even of the descending colon, has occurred. In these cases help may be obtained by a daily diminution of the bulk of water used.

The best medicinal treatment of constipation consists in the administration of the fluid extract of *rhamnus purshiana* (cascara sagrada) or some form of aloes or aloin (generally best combined with belladonna and strychnia). Sometimes podophyllin may be used separately or combined with other laxatives. There are no other laxatives or cathartics so likely to cure constipation as these drugs. Whichever one of these is used, it should be given, week by week, in gradually diminishing doses. Whether they should be given in small doses three times a day, or larger doses once a day depends on the conditions. Generally, the patient not being sick and not willing to be bothered, and with the intent of having a stool after breakfast, and the medicine requiring a certain length of time to act, directly after supper or at bedtime, in one dose, is the best treatment. How-



ever, even with the best possible care, when these drugs are given, some patients require a dose daily for months and even years, and can not obtain a stool without it. This is generally not due to the action of the pill on the mind, as the substitution of an inactive tablet will prove.

Perhaps the next best laxative is phenolphthalein, the new synthetic cathartic. This drug seems to be harmless, and seems to act well, and, if given in tablet, should be crushed with the teeth before swallowing, as it apparently acts better when well granulated.

In the simple constipation that is now being discussed it is inadvisable to resort regularly to enemas of any kind or to more brisk cathartics than those above mentioned or to saline cathartics.

Unfortunately, the drug of most promise in constipation, cascara sagrada, as obtained from the drug stores is many times worthless, so far as laxative activity is concerned. On the other hand, some cascara preparations offered to the profession contain other ingredients than cascara, and consequently being more active are supposed by the physician to be more satisfactory, but the patient is really getting a more active drug than the physician desired. The physician should, therefore, be very careful to select and to obtain the best possible pure cascara sagrada preparation for each patient, and after finding the amount of this preparation that the patient needs for laxative effect, should gradually reduce the dose week by week until the patient is cured.

#### IN INFANTS

Wunsch (*Deutsche med. Wchnschr.*, March 15, 1906), suggests in obstinate cases of constipation in infants a rectal injection of olive oil on every alternate day. He has found the treatment curative.

---

#### DIVERTICULITIS

Surgeons are directing the attention of the profession to an inflammation of this second, but irregularly placed, "appendix" of the intestine, and it seems now to have been proved that not a few cases of unexplained abdominal pain and some instances of diffuse perito-



nititis are caused by inflammation of this structure. The symptoms of acute inflammation of Meckel's diverticulum are similar to those of appendicitis, except that the region of primary tenderness and pain is generally in the left abdomen. A diagnosis of localized inflammation in this region would call for the same treatment as that of acute appendicitis, viz.: absolute rest, local ice applications, gentle evacuents of the bowels and a liquid diet. Perhaps enemata other than that of small quantities of warm oil had better not be used.

The symptoms calling for surgical consultation and perhaps immediate operative interference are the same as in appendicitis, viz.: high temperature, rapid pulse, severe pain, a tumor and increasing leucocytosis. Perhaps, like appendicitis, a serious inflammation of this structure could occur without a leucocytosis, hence leucocytosis should be confirmatory and should not necessarily make a decision for or against operation.

Chronic inflammations, more frequently in the region of the sigmoid, probably occur oftener than has yet been noted. Gentle oil injections or small quantities of physiologic saline solution to keep the sigmoid and descending colon free from any stasis of feces would be the proper local treatment. A diet that did not cause intestinal indigestion and intestinal fermentation in the individual case would be the diet indicated. Small but sufficient doses of saline laxatives should be the laxative treatment, if such were needed. If pain and bowel discomfort continued or recurred in the same region of the abdomen, and localized tenderness was found on the patient's moving about and attending to his ordinary duties, operative interference should be considered.

---

### GALLSTONE COLIC

While a large number of individuals are found, on autopsy, to have gallstones in the gall bladder, only a certain proportion of these people, perhaps much less than half, have ever had a gallstone colic. While a tendency to deposits in the gall bladder is present whenever there is imperfect action of the liver and consequently a concentrated or imperfect chemical secre-

tion of the bile, gallstones are not likely to be formed until there has been some congestion, or previous inflammation, or at least irritation in the gall bladder itself. Gastrointestinal inflammation of mild type and duodenitis of mild type are of such frequent occurrence that probably the bile ducts readily become inflamed, either by continuity or by reflex irritations. The inflammation has to travel only a little farther to involve the gall bladder, and any infection of the gall bladder or any increased mucous secretion of the gall bladder furnishes nuclei for calculous deposits from an imperfect bile. Consequently, the predisposing causes to the formation of gallstones are rich, irritating foods, gastritis, duodenitis, intestinal indigestion and fermentation, alcohol, sedentary habits and an insufficient amount of water ingested.

The symptoms of gallstone colic are too well understood to require description, but the irritations from gallstones in the gall bladder are readily and perhaps generally undiagnosed. The irregular and infrequent or recurrent pains and distress caused by gallstones in the gall bladder and the consequent reflex disturbance of the digestion are attributed generally to dyspepsia in some form, and the stomach is actively treated. Actual inflammation of the gall bladder, unless there is a formation of pus and consequent fever, with marked local symptoms, is also, generally, overlooked. Consequently, just as appendicitis is looked for and excluded in the lower abdomen, so cholecystitis, or irritation of the gall bladder, should be looked for and excluded in the upper abdomen before prolonged treatment of supposed other conditions is begun.

#### TREATMENT

Biliary colic being present, morphin sulphate  $\frac{1}{4}$  of a grain and atropin sulphate  $\frac{1}{150}$  of a grain should be given hypodermatically, at once. If the patient is able, he should be put into a hot bath in order that relaxation of the abdominal muscles may take place, as this favors the passage of the stone. If the patient is unable to go to the bathroom, or if a bathroom is not at hand, hot water fomentations should be applied to the upper abdomen, and frequently changed. It is absurd to apply any mustard or other counterirritant to

the abdomen; also, dry heat is not indicated. Moist heat to produce relaxation is the object of local applications. If the pain is abated by the morphin injected and its intensity again increases,  $\frac{1}{8}$  of a grain more may be given in  $1\frac{1}{2}$  hours from the previous injection, and again in another  $1\frac{1}{2}$  hours another eighth grain may be given, if needed. The dose of atropin should not be repeated. It tends to dry up the secretions, contract the blood vessels and inhibit the action of the morphin. The first dose of atropin is given to cause some slight dulling of the peripheral nerves and thus, perhaps, aid in the action of the morphin in inhibiting the pain caused by the contracting bile duct. If at any time the pain is so intense that morphin does not stop it, inhalations of chloroform are indicated. It is much better to give inhalations of chloroform to obtain abdominal relaxation and anesthesia than to stupefy the patient, or cause coma, with morphin.

The best internal aid to the passing of the stone is the plentiful drinking of hot water. Warm olive oil, if the patient is not vomiting, may also be administered on the supposition that it may lubricate the lower end of, or regurgitate up into, the bile duct. No massage should be done or pressure exerted over the upper abdomen with the idea of assisting the passage of the stone.

As soon as the stone has passed into the duodenum or dropped back into the gall bladder the pain, of course, instantly ceases, and a patient who has received large doses of morphin then quickly relapses into a deep sleep. It is generally advisable to keep the patient awake for several hours by gently awakening him every time he drops asleep. By following this rule there will be no danger of morphin coma, or, if it should develop, it would be instantly noted and the proper treatment inaugurated. The patient should remain at rest for the remainder of the day, and in a few hours should be given a saline purgative.

If the stone does not pass, the pain may still gradually cease, or occur at intervals only. If the stone remains in the common duct of course jaundice soon develops. It then becomes a question of medical and surgical decision as to how long an impacted stone should be allowed to remain before there is a surgical

interference. The absence of pain during this period is not a guarantee that the stone is not impacted, if other symptoms point to such a condition. A stone long impacted may have so injured or dulled the nerves involved that pain is no longer felt. On the other hand, it is possible that the stone may have passed, but caused sufficient irritation to produce swelling and inflammation of the duct to the point of obstruction and hence jaundice. A dose of calomel or castor oil would then be proper treatment, followed by large doses of olive oil.

Any stomach or duodenal inflammation should be relieved by daily saline laxatives, perhaps best the effervescent phosphate of soda, and the administration of bismuth and soda three times a day, one hour before meals.

R. gm.  
Sodii phosphatis effervescentis.....100| or  $\bar{\text{z}}$ iv

Sig.: One or two teaspoonfuls, in a glass of water, before breakfast.

R. gm.  
Bismuthi subnitratis  
Sodii bicarbonatis, āā.... 20| or āā,  $\bar{\text{v}}$   
M. et fac chartulas 20.

Sig.: A powder three times a day, one hour before meals.

The diet for a few days should be similar to that for catarrhal jaundice, viz., free from fat. In other words, milk is not a good diet. A little dry toast, broiled lean meat, as steak or chops, hot tea and poached eggs allow sufficient change of diet for a few days. Cold drinks of any kind should not be taken, but plenty of water should be given daily. If there is constipation there should be a daily laxative, as the phosphate of soda, or any other saline. If there is jaundice, daily hot baths are advisable.

A permanent obstruction should not be allowed to go on long without surgical interference, as the longer a jaundice persists the more bloody and dangerous becomes the operation.

As it is rare for a single stone to have been formed, generally several calculi having been started at once, there will probably be other colics. A properly fitting corset or abdominal band sometimes seems to prevent the stones from washing or shaking over into the duct. Whether there are more calculi in the bladder or not, the conditions that caused the first deposition of salts,



unless care is taken, will cause the formation of more stones. There is no known drug or water cure or diet that will dissolve stones already formed, although it is possible that in certain unknown conditions a calculus may disintegrate.

There seems to be no doubt, from the statistics now in evidence, that after several attacks of gallstone colic and when there is every reason to believe that there are more gallstones in the gall bladder, either from pain, indigestion symptoms or from localized symptoms which have been proved not to emanate from the stomach or intestines, even without gallstone colics, the gall bladder should be surgically explored, and stones, if found, should be removed. After a feverish attack or several feverish attacks due to a cholecystitis there is no question of the advisability of operation, but the prognosis is so much better before such inflammation has occurred or the danger from either an impacted stone, or from a cholecystitis with future adhesions, that operation should now generally be early advised. Frequently, however, such advice is refused, and some sensible medical treatment must be devised. The better all of the organs of the body functionate, the less imperfect is the bile, and, consequently, the less tendency to gallstone deposits. For such patients a rigid, sensible hygiene and a diet that causes the least indigestion should be outlined. To obtain this object the individual must be carefully studied. No one diet is *the* diet to prevent the formation of gallstones. Alcohol, as tending to inhibit digestion and to congest the liver, should certainly be prohibited. If the circulation is impaired it should be improved with proper cardiac tonics. If the kidney functions are not perfect, the twenty-four hour urine should be studied carefully to determine what is well excreted and what not, and the diet and drink arranged accordingly. The reaction of the liver on the kidney and the kidney on the liver can not be too carefully considered. If the circulation is good and the kidneys are healthy, considerable amounts of distilled water should be regularly drunk. There is no lithia solvent and no spring water solvent for gallstones. A visitation of gallstone patients to a "cure" where they are subjected to rigid régime, their circulation improved, the bowels made to act sufficiently,



considerable amounts of water drunk, the diet simple, and means used to increase the circulation in the skin by baths and massage and in the muscles by exercise, will surely improve every such patient, although it will not preclude recurrent attacks of gallstones until the gall bladder is empty, although, as above stated, gallstones may remain in the gall bladder for years without causing colic.

Hyperacidity of the stomach should be combated, and mineral acids and vinegar should ordinarily not be given. The vegetable fruit acids which oxidize to alkalis may be allowed and are perhaps beneficial. Whether much alkaline mineral water should be taken depends somewhat on the digestion and the tendency to gout and uric acid conditions, but the sooner that the profession understands that the most solvent water to drink is distilled water, the better will it be for their patients.

The repeated administration of so-called cholagogues, or drugs that are supposed to increase the flow of bile, is not good treatment. Calomel is a cholagogue only in its ability to cause a complete cleaning out of the upper part of the intestine, and is certainly often indicated, but should not be frequently repeated. Salicylic acid preparations somewhat stimulate the secretory activity of the liver, but it is hardly advisable, in the treatment of the condition under discussion, to give a drug so foreign to the system as is salicylic acid. Of course if there is intestinal fermentation and a salicylate, as salol, is indicated, it should be given. A mineral acid, as dilute hydrochloric, or dilute sulphuric, or dilute nitrohydrochloric acid, seems at times to increase the flow of bile to the duodenum, as the duodenum objects to acid and strives to neutralize rapidly any acid that reaches it. These acids, then, sometimes seem to increase the flow of the bile, but except for a short period could not be of any value in disturbances of the gall bladder.

If there is believed to be chronic congestion of the bile passages, the drinking of a glass of hot water an hour before meals is beneficial. Also ammonium chlorid is indicated in this condition, and this drug is just as valuable in subacute inflammation of the bile passages as it is in the subacute inflammation of the

bronchial tubes. It may be administered for this purpose as follows:

| R.                         | gm. or c.c. |             |
|----------------------------|-------------|-------------|
| Ammonii chloridi           |             |             |
| Acaciæ granulatae, āā..... | 10          | or āā, ʒiii |
| Aquæ menthæ piperitæ.....  | 100         | fl. ʒiv     |

M. et Sig.: A teaspoonful in plenty of water, three times a day, after meals.

If the ammonium chlorid is very disagreeable to the patient, it may be administered in simple carbonated water or in vichy.

It may be well to repeat the necessity for daily thorough evacuation of the bowels, and this should be accomplished by a saline, preferably, or by an aloin, rhubarb, or cascara preparation, as seems best to suit the patient.

While any severe exercise or sudden movement may precipitate a gallstone colic, it has been frequently noted that horseback riding and perhaps automobile riding is beneficial to a patient with a sluggishly acting liver.

# DISEASES OF THE RESPIRATORY ORGANS

---

## COLDS

It is generally understood by a cold that an acute rhinitis (coryza), acute pharyngitis, and perhaps acute laryngitis, tracheitis and bronchitis, one or more of these conditions, is present. The causes of "catching cold" are: infection, impure air, dust, a local tendency, a general tendency.

Most colds are contagious, more or less directly, and are likely "to run" through families, offices, stores and schools, once having started.

Impure air breathed in crowded rooms or vehicles, or in stuffy, ill-ventilated sitting-rooms or bedrooms is a distinct cause of nasal and throat congestions.

Dust-laden air, whether in buildings, vehicles or on the streets is conducive to nasal and throat irritation sufficiently to cause colds, and it is obviously noticeable that when cities neglect to water their streets, as they often do in the late fall (before, in the northern cities, the snow lays the dust) and in early spring, that catarrhal affections of the upper air passages are enormously increased.

A local tendency to colds is caused by chronic hypertrophies and congestions of the nose and throat, sub-acute or chronic catarrhs of these regions, by any condition of the lungs or heart that would tend to cause congestions of these mucous membranes, and especially by such a condition of the nose or nasopharynx mucous membrane (hypertrophy and adenoids) as will cause mouth breathing more or less constantly. Such patients are more prone to acute infections of the throat and lungs than are those who breathe through their nostrils.

A general tendency to colds is produced by a hyper-susceptibility, or a diminished resistance power, to the ever-present germs and irritant dust particles in the atmosphere. Such a condition is brought about by any

chronic debility or subnormal condition of the patient, be it anemia or a more serious condition. In many instances this general tendency to colds lasts a lifetime, and it may even occur in families, and any amount of hygienic care, good food and tonics may not prevent the frequent recurrences of colds. Such patients, if possible, should live in a climate that is not subject to radical changes in temperature and in a locality that is as dust-free as possible.

### PROPHYLAXIS

To prevent colds such measures should be instituted as will prevent the above causes, and the order of their importance is really in the inverse order of the list of causes named. The general tendency to colds should be prevented by hygienic living, which means outdoor air and fresh, clean indoor air, and as fresh air while at work as can be acquired with the surroundings in which the person must be. Overheated rooms predispose to colds and are insanitary. An over-amount of clothing is inadvisable, but just what clothing is proper for each patient must be decided by good judgment and careful advice. Physical exercise or gymnastics should be advised for those who do not labor. Cold sponging in the morning of the face, neck and chest is advisable, and any treatment, massage, hydrotherapeutic or other, that will tend to make the general circulation of the skin better will prevent catching cold. Of course circulatory and digestive disturbances must be corrected, and the proper eating of the proper food for the climate and time of year is a great aid by preventing such disturbances of secretions and excretions as cause the congestions that allow colds to develop.

Chronic inflammation of the upper air passages must be cured if possible. Local hypertrophies and superfluous glandular tissue should be removed.

Boards of health should have power to cause the prevention of street dust plagues and to cause proper cleanliness of public vehicles and public gathering places like halls, theaters, etc. A general public education on the seriousness of, and the infections carried by, unnecessary dust would soon cause such state legislation and

city ordinances as would prevent this unnecessary nuisance. Many dusty occupations are made dustless by proper ventilating or suction apparatus, and where such prevention of dust is possible it should be required by law.

It is certainly inexcusable in this age to cause clerks in stores, or operators in factories, or children in schools, to have so few cubic feet of air space per individual as to allow impure air. Individual instances of such conditions are, of course, frequent and many, but the trend of public opinion and of public officials and of boards of health is to prevent these conditions. Many families are still very careless about the air in their rooms, and especially in their bedrooms. While urging plenty of fresh air during sleep, it is not advisable nor advised that enough windows, or windows and doors, be kept open to allow of strong drafts. The best plan is to have the doors of the sleeping-room closed, unless the room is very small, and one or more windows widely open.

The prevention of the spread of colds by infection in the household is simple, and it should be generally known that they are contagious and that a patient coughing and sneezing should prevent spraying by the constant use of his handkerchief. He also should keep away, or be kept away, from close contact with any other individual, unless, of course, the patient is a child. The patient should use plenty of handkerchiefs so as always to have a clean one at hand, and the handkerchiefs should be put into a handkerchief bag and then washed separately from other clothing. The rooms in which a patient with a severe sneezing and coughing cold has been, even for a short time, should be well aired. This is better for the patient and better for the rest of the family.

In public vehicles or in any public place, whether in schools, in stores or in factories, a patient with a cold and cough should always use his handkerchief and prevent spraying of the atmosphere. The more this is insisted on the less frequently will diphtheria, tonsillitis, pneumonia, tuberculosis, and even colds, occur. Spitting ordinances are now in evidence in most cities and should be in the smaller towns. It is



indecent to spit in any place except receptacles prepared for that purpose, or, if must be, in the street gutters. and a patient with even nothing more than an ordinary sore throat or a simple bronchitis should seek running water into which he may expectorate if he does not care to use his handkerchief. An antiseptic cleansing spray or gargle for a patient who has a cold will prevent the infection of others.

#### ABORTIVE TREATMENT

A cold having been caught, the attempt to abort it is made by draining the blood vessels (catharsis, sweating) and thus relieving the local congestion, or by dilating the peripheral circulation and thus relieving tension, or by locally treating the inflamed mucous membrane either by astringents or by vasoconstrictors or by drugs that dry up the mucous secretion. During this first and acute stage of acute colds, and especially of coryza, various drugs and methods are used to further the indication for the relief of the local blood tension and the congestion of the local mucous membrane.

In four recent issues of the *New York Medical Journal* (Oct. 31, Nov. 7, Nov. 14 and Nov. 21, 1908), sixteen physicians have outlined what they considered the best treatment to abort colds. It is interesting to note that of these sixteen, fourteen advised the use of Dover's powder and two morphin. Four only advised a coal-tar product and then acetphenetidinum (phenacetin). Three advised Turkish baths, seven a hot foot bath, one a hot sitz bath, two hot lemonade, and two alcohol, presumably in some hot liquid. Five would give aconite, one veratrum viride and six would give quinin. One administers castor oil, three give calomel in one dose, two give calomel in divided doses, and one follows the calomel with a saline. Three would give salines alone. Sweet spirits of niter or a nitrite was advised by five. Atropin was advised by four, belladonna by three. Locally suprarenal extract in some form was advised by four, and various sprays containing camphor, menthol, etc., were advised by six physicians. Later, various sprays or washes, among which may be mentioned Dobell's solution, Seiler's tablet solution or boric acid solution, were recommended.

It is thus seen that the method of depletion of the blood vessels and the relief of local congestions most advised is that of sweating. Theoretically the best means to produce this kind of a sweat is by the Turkish bath or by hot-air treatment, the body baking as it is termed.

The next best would be a hot tub-bath, after which the patient is put to bed, with hot lemonade or other hot drinks, with or without alcohol, as deemed advisable. Most patients will not bother, however, with such treatment, and substitutes, as hot foot-baths and hot sitz baths are more likely to be employed, and if even these methods are not used, and even with these methods, Dover's powder in dose of 0.60 gram (10 grains), as the patient goes to bed, is certainly good treatment.

The administration of quinin in cold to abort colds is not now much recommended by physicians, although often used by the laity. A dose sufficient to act as a derivative and perhaps inhibit the migration of the white blood corpuscles from the congested vessels, which it seems to be able to do, must be large enough to cause unpleasant cinchonism. Also the tendency of colds during the last few years has been to cause inflammation of the middle-ear. This being the case, physicians have become wary of using any drug like quinin which will cause middle-ear hyperemia and perhaps predispose to inflammation of the middle-ear. Theoretically, also, as most nasopharyngeal inflammations are due to some germ, leucocytosis and ameboid activity are needed to combat the infection, and quinin, if it does not actually inhibit leucocytosis, does inhibit the ameboid activity of the polymorphonuclear leucocytes. Consequently quinin and perhaps salicylic acid should not be administered unless there is some specific indication for them.

While we now so frequently and constantly inveigh against the use of coal-tar products because they have been too much used by the profession in prolonged acute disease, and by the laity in repetitions of acute pain, it should not be forgotten that two or three doses of a coal-tar product in a condition like an acute cold is of great advantage, not only in reducing the temperature, reliev-

ing the tensity of the circulation, dilating the peripheral blood vessels, and causing sweating, but also as an analgesic. A combination such as either of the following is efficient in shortening the first stage of acute cold and perhaps aiding in preventing its continuance.

| R.                                  | gm. |               |
|-------------------------------------|-----|---------------|
| Acetphenetidini .....               | 1   |               |
| Phenylis salicylatis .....          | 1   | or āā, gr. xv |
| Caffeinæ citratæ .....              | 15  | gr. iiss      |
| M. et fac chartulas, 3.             |     |               |
| Sig.: One powder every three hours. |     |               |

Or:

| R.                         | gm. |               |
|----------------------------|-----|---------------|
| Morphinæ sulphatis .....   | 01  | gr. 1, 6      |
| Acetphenetidini .....      | 50  | or            |
| Phenylis salicylatis ..... | 50  | āā, gr. viiss |
| M. et fac chartulam, 1.    |     |               |
| Sig.: Take at once.        |     |               |

As Dover's powder often causes some nausea, any combination of the desired dose of morphin with an acetanilid combination as the compound acetanilid powder, in dose deemed efficient, will effect the object desired as well as will Dover's powder.

The action of the nitrites in dilating the peripheral blood vessels and promoting sweating, when other methods are also used to cause that condition, is satisfactory. How well the sweet spirit of niter acts as a diaphoretic depends on how warm the patient is kept and how much hot water he drinks.

While we advise the drinking of hot water to promote perspiration after hot baths, etc., it is not advisable to have the patient drink much water if sweating is not to be promoted, as it fills up the blood vessels and increases the local congestions. Hence, if it is deemed best to dilate the blood vessels and relieve congestion with aconite or by purging and not use any method to cause sweating, the amount of liquids ingested should be kept low during this stage of the cold.

The administration of aconite in small doses frequently repeated is still used by some physicians as the best treatment in the first stage of a cold, but not nearly so frequently as it used to be used, at least not alone. In the combination of a "rhinitis" tablet, which generally contains several ingredients, aconite or aconitin

is often administered by the profession, and often taken by the laity without such advice. The activity of the rhinitis tablet is due to its aconite and to its atropin, and, perhaps, slightly to the small amount of morphin that it contains. A patient who is put thoroughly under the influence of aconite to abort his cold will subsequently have more prostration than with any of the above advised methods of treatment.

In any congestion of the upper air tract, throat, or nose it is certainly advisable to unload the alimentary canal, and with the method that will produce the least general discomfort and act the quickest. The cathartic selected should depend upon the time of day at which the patient is first seen. If during the daytime, a saline cathartic should ordinarily be selected; if at night, calomel is best in the dose deemed sufficient, generally perhaps best combined with bicarbonate of soda, as:

|                                |     |            |
|--------------------------------|-----|------------|
| R.                             | gm. |            |
| Hydrargyri chloridi mitis..... | 20  | or gr. iii |
| Sodii bicarbonatis .....       | 50  | gr. viiss  |

M. et fac chartulam, 1.

Sig.: To be taken at once.

Or one or two grains of calomel may be given with an aloin, strychnin and belladonna tablet at bedtime. If the patient has a tendency to constipation it is advisable to give a saline, as a seidlitz powder or citrate of magnesium, or some cathartic water, in the morning.

It is often advised to give calomel in small doses, as perhaps 1/10 of a grain, every half hour until one grain has been taken, aiming perhaps at the old antiphlogistic (prevention of inflammation) theory. This seems hardly advisable except as it may keep the patient interested and busy, as what is needed is a calomel movement and depletion, and not a troublesome diarrhea, which often occurs when calomel is thus administered. Also, patients susceptible to calomel may be salivated by small doses when they are not affected by a single large dose.

The abortive treatment of colds with so-called rhinitis tablets, while perhaps the best treatment when the patient must be exposed to further chilling or more dust and must keep at his occupation, seems theoretically inadvisable in the first stage of nose and throat inflam-

mation. The main action of these tablets is the atropin action, unless the patient is somewhat prostrated by the aconite or aconitin that they contain, hence the drying up of the mucous secretions of the congested nose and throat by atropin should theoretically tend to prolong the first stage and perhaps thus prolong the second stage, as the free exudate from the inflamed mucous membrane is Nature's best method of depletion of these congested areas. Therefore, a patient housed and willing to give from ten to fifteen hours to the best abortive treatment of an acute cold should not receive rhinitis tablets, while a patient who must attend to his business may take these tablets, but ordinarily not for more than from twenty-four to forty-eight hours. A good rhinitis combination is as follows:

| R.                         | gm.      |            |
|----------------------------|----------|------------|
| Aconitinæ .....            | 00003    | gr. 1/2000 |
| Atropinæ sulphatis .....   | 00015 or | gr. 1/400  |
| Strychninæ sulphatis ..... | 0006     | gr. 1/100  |
| Morphinæ sulphatis .....   | 002      | gr. 1/30   |
| M. et fac tabletam, 1.     |          |            |

The best method of administration of the above tablet is one every hour for three doses, and then one every three hours. From ten to fifteen tablets may be given a patient for such use.

If aconite is to do any good in aborting an acute cold it must do it in from twenty-four to thirty-six hours; consequently it is inadvisable to cause any depressing aconite effect after that length of time.

The local abortive treatment of colds is by sprays, inhalants and gargles. The action of atropin or morphin (taken internally) on the mucous membranes of the nostrils and throat has already been referred to. Suprarenal extract in various dilutions has been used for the object of contracting the mucous membrane of the nostrils and throat. Very weak solutions may be so used, but any intense action is followed by a subsequent congestion. However, in the intense congestion of the mucous membrane of the nostrils, with obstruction, that occurs so frequently in hay fever, suprarenal extract used locally gives great relief. The most lasting relief, however, probably comes from a suprarenal oint-



ment, of which a small portion is placed in the nostril. Watery sprays should not be used in the nostrils and the patient then subjected to dust or outdoor air, unless the weather is mild. Protection can be given to nostrils which have been cleansed with watery sprays by oil sprays, or the nostrils may be plugged, temporarily, with cotton.

During this stage menthol inhalants in various combinations are often of value in primarily shrinking the membrane of the nostrils and relieving the obstruction, and, secondarily, in perhaps stimulating a secretion which relieves the deeper congestion. A good solution for such inhalation is as follows:

| R.                                      | gm. or c.c. |                 |
|---|-------------|-----------------|
| Mentholis .....                         | 15          | or      āā, ʒss |
| Camphoræ .....                          | 15          |                 |
| Eucalyptolis .....                      | 15          |                 |
| Olei pini silvestris .....              | 15          |                 |
| M. et sig.: For use in a nasal inhaler. |             |                 |

The above solution should not be used in an atomizer.

## SECOND STAGE

If a cold is not aborted by any of the above methods, the mucous drippings or secretions from the nostrils become less, a purulent secretion begins, then more or less mucopus, and finally the usual catarrh of the nasal passages and nasopharynx occurs. If bronchitis is present its second stage partakes of the same characteristics as the coryza.

It is certainly good judgment, at least twice, and perhaps better three times a day, for the patient to cleanse his nostrils with watery salines or alkaline solutions. He should also use these solutions so as to cleanse the nasopharynx either by snuffing the liquid back through the nostrils or by any manner of gargling as will cleanse this cavity. Mild oil sprays may be used subsequently to prevent the membrane from becoming irritated after these washings. Careless nasal douching should not be done lest liquid or infection be forced in the Eustachian tubes, but properly done such cleansings tend to prevent frontal sinus suppurations, plugging and blocking of the Eustachian tubes and conse-

quent rarefaction in the middle ear and subsequent congestion, and also tend to prevent the catarrh becoming more or less chronic. Neglected catarrhs of the nose and throat tend to hypersecretion of the glandular tissues in these regions and hypertrophied mucous membrane, both of which cause abnormal secretions which will not inhibit the growth of the bacteria. In other words, such catarrhal patients are more prone to recurrence of colds and to the development of tuberculosis and pneumonia.

This second stage of nasal or throat cold is just as much benefited by the action of ammonium chlorid as is the second stage of bronchitis. For this purpose it may be administered as follows:

| R.                         | gm. or c.c. |            |
|----------------------------|-------------|------------|
| Ammonii chloridi .....     | 5           | 3iss       |
| Syrupi ipecacuanhæ .....   | 5           | or fl.5iss |
| Syrupi acidi citrici ..... | 25          | fl.5i      |
| Aquæ, ad .....             | 100         | ad. fl.5iv |

M. et sig.: A teaspoonful, in water, every two hours.

This prescription presupposes there is no cough. If there is a troublesome cough, a cough frequent, without the necessity of expectoration, i. e., a non-productive cough, codeinæ sulphas should be added to the prescription to the amount of 0.20 gram (3 grains), i. e., 0.01 gram (1/6 grain) at a dose.

#### SUBACUTE STAGE

An ordinary cold should tend rapidly to recovery whatever the treatment. Purulent discharges in a few days should become mucopurulent and then mucous. The object of the above treatments is either to prevent the purulent discharge from developing at all, or to shorten it and hasten recovery. If in spite of treatment or from lack of treatment a mucopurulent discharge persists for some little time from either the nostrils, throat, or from a bronchitis, the treatment should be tonic in every respect; outdoor air if the patient has been housed; the bowels must move daily; the food should be nutritious, even if small in amount, if there is loss of appetite; and such tonics as seem to best suit the patient. Generally a good one is as follows:

| R.                             | gm                 |         |
|--------------------------------|--------------------|---------|
| Strychninae sulphatis .....    | 04                 |         |
| Arseni trioxidi .....          | 04 or 55, gr. 2 '3 |         |
| Ferri reducti .....            | 1                  | gr. xv  |
| Quininae sulphatis .....       | 3                  | gr. xlv |
| M. et fac capsulas siccas, 20. |                    |         |

Sig.: One capsule three times a day, after meals.

If a nasal and nasopharyngeal catarrh does not tend to heal, but remains chronic, the patient should be sent to a nose and throat specialist to determine whether or not there is any local reason for the persistence of the condition. If such causes are found and can be removed the removal should be immediate, as a nasopharyngeal catarrh which has long persisted is hard to cure unless the patient removes to a more suitable climate.

A child who has frequent recurrences of colds should be carefully examined for adenoids, and if such are found they should be removed, and the general hygiene and life should be so aimed and directed as to prevent the development of a tendency to tuberculosis.

### CHRONIC BRONCHITIS

Forchheimer, of Cincinnati, thoroughly discusses this troublesome disease in the *American Journal of the Medical Sciences*, February, 1909. He believes that the patient who has marked exacerbations in cold weather or has a prolonged winter cough should, if possible, go to a warmer climate during the cold season. This is especially advisable in cases in which there is an intermittence of the bronchial catarrh during the warm seasons, because many times chronic bronchitis begins as a recurrent winter cough which persists, until finally, it becomes an all-the-year cough. Like all recurrent inflammations and neuroses, the more frequently it occurs or the longer that it has lasted, the more persistent is the condition, consequently, every effort should be made to prevent a prolonged winter cough.

Of course, the most frequent cause of such a recurrent cough is latent or more or less active tuberculosis, but chronic bronchitis without tuberculosis while not of common, is certainly not of infrequent occurrence. If there is any season of the year that is worse for such patients than any other, it is the windy, dusty period of early spring, when there is but little, if any snow in

the Northern and Eastern United States, and when it is a little too cold to sprinkle the streets properly, or the city authorities are careless in not beginning the sprinkling of the streets early in the season. Dust is certainly an exciting cause of the bronchitis, and also such dust carries with it germs which easily produce infection, when deposited on mucous membranes that are so unhealthy as are the bronchial mucous membranes of these patients. Also, most of these patients become more or less debilitated by the cough and expectoration, and are susceptible to other infections, especially of the upper air passages.

It is too often forgotten in the treatment of chronic bronchitis that though the cough and expectoration is the most important symptoms and the one for which the patient desires treatment, a careful investigation into his general condition, and treatment aimed at his general health will cause more improvement than the administration of expectorants, either sedative or stimulant. Generally, however, some expectorant may be advisable. In this form of bronchitis, opium, or any of its derivatives, is rarely indicated as a sedative, as the cough is usually for the purpose of removing the secretion in the bronchial tubes, and a sedative, or anything that would diminish the irritability of the nerves so that the secretion would accumulate and not be expectorated, would be inadvisable and contraindicated. Also, ipecac, alkalies, and pilocarpin, mentioned by Forchheimer, are rarely indicated in chronic bronchitis. Ammonium chlorid for its stimulant action in causing the mucous membrane to secrete a healthy mucus may for a short time be of advantage, but should not be used too long, as it sooner or later causes nausea and disturbance of the stomach.

In certain cases, some of the aromatic expectorants as turpentine, benzoates, eucalyptol, and santal oil may be of benefit to the patient. Creosote or some of its many preparations may be of value, but most of these drugs, if administered for any length of time, cause indigestion, and, if there is any kidney disability, many of them are contraindicated.

Terpin hydrate is often the best and simplest drug to administer.

If an asthmatic condition be present with the bronchitis, potassium or sodium iodid becomes the best treatment.

Circulatory debility should certainly be treated. Strychnin alone will often do these patients good. Arsenic in small doses is sometimes of advantage.

Forchheimer believes that there is no doubt that some of the aromatic oils, when inhaled from proper inhalers, are of great value.

He also calls attention to the posture treatment when profuse bronchial secretion tends to remain in the bronchial tubes, and would gradually raise, little by little, the foot of the bed of such a patient, until the head is distinctly lower than the feet. He finds by experience that the first elevation of the bed at the bottom should be about two inches; later this may be increased to four or five inches. If there is one particular part of the lung where the secretion accumulates, such a side posture as will facilitate the flow of this secretion toward the larger tubes and thus promote expectoration, may be adjusted by pillows or bolsters.

In fetid bronchitis, creosote, thymol, oil of eucalytus, or oil of pine inhalations are of benefit. Also the administration of creosote and of santal oil internally seems to be of benefit, but the more thoroughly the dilated bronchi are evacuated of their secretions by posture, the less odor will the expectoration have. Also, such patients with fetid bronchitis should, if possible, sojourn for some time in pine woods.

It should not be forgotten that these patients in some instances have combined with the necessary cough an entirely unnecessary one, a cough that raises nothing and is due to throat irritations, often to an enlarged and irritated lingual tonsil. Such a cough can be more or less controlled by the patient, if he is told that it is almost unnecessary, and may also be markedly helped by a few daily local applications of boroglycerid to the lingual tonsil. Soothing alkaline gargles will relieve this kind of a cough, which should not be treated by sweet, irritating, or nauseating expectorants.

Forchheimer well says that the best climate, or the best "cure," to which the bronchitis patient should be sent is determined by the individual condition of that



patient. While one patient had best go to New Mexico, another had best take a sea voyage; while one needs circulatory and skin stimulation at some sanatorium or hot springs, another needs exercise and mountain climbing.

As Forchheimer suggests, and as has been pointed out by others, there can be no question that we do not frequently enough teach these bronchitis patients respiratory exercises.

Patients with some arteriosclerosis do well on small doses of iodid, given for long time. Other patients need sufficient daily exercise to cause free perspiration.

---

### PLEURISY

The frequency of dry pleurisy during the progress of pulmonary tuberculosis is well understood, and even without definite lung lesions the cause is generally recognized and the patient consequently properly treated. Acute pleurisy with effusion, however, is all too frequently considered non-tuberculous and consequently the proper after-treatment of the disease is not carried out.

Physicians connected with sanatoria for the cure of tuberculosis will all attest to the great frequency of a pleurisy with effusion as preceding, by a longer or shorter length of time, a tuberculous outbreak in the lungs. It should also be stated that no condition of the lungs is so frequently entirely overlooked, or if diagnosed, improperly treated, as pleurisy with effusion. Case after case of a permanently adherent lung with perhaps permanent cardiac displacement and with contraction of the chest, and a lower lobe of a lung that can never again be aerated, is constantly found by the lung specialist. Even if the effusion is diagnosed many a patient is told that it will gradually be absorbed, and he may even be sent into the country to rest and await its absorption, all to the permanent damage of that side of the chest. Consequently, in any pleurisy with effusion, whatever its origin, tuberculous or other, even if there is not much dyspnea or displacement of the heart, the fluid should be withdrawn if it progressively increases or if it remains several days without decreasing. It seems to be good judgment not to re-

move all such fluid, as the plastic serum which is in close contact with the pleural tissue apparently has the power to combat bacteria and bacterial poisons. In other words, this substance seems to contain an antitoxin, or the ability to cause antitoxin to be produced, and if it is removed the tissues become more susceptible to infection.

For the sake of a positive diagnosis of the cause of pleurisy a portion of the liquid withdrawn may be centrifuged and if tubercle bacilli are present they may be discovered. Generally, however, they are not so found even if tuberculosis is the cause of the pleurisy. A specimen of such withdrawn, settled and centrifuged, fluid which has not been allowed to become contaminated with other germs, may be injected into a guinea-pig or rabbit, and if tubercle bacilli are present the animal will show the disease in a certain number of weeks.

Another suggestive indication that the origin of a pleurisy is due to tuberculosis is that this centrifuged specimen of the lower stratum of the settled pleural fluid may show relatively a very large number of lymphocytes, while if the pleurisy has been caused by other infection the polymorphonuclear leucocytes are found in greatly increased numbers. Also presumptive evidence of the tuberculous or non-tuberculous origin of the pleurisy may be given by a differential blood count. If the polymorphonuclear leucocytes are relatively increased in number, the presumption is that the condition is not tuberculous but due to some other infection. If, on the other hand, the lymphocytes are relatively increased in number and the polymorphonuclear leucocytes are not increased, the cause of the pleurisy is probably tuberculosis.

Of course diagnostic tuberculin injections and tuberculin vaccinations may be done to prove or disprove that the patient is harboring a tuberculous focus. However, it is certainly supposable, and probably true, that a patient might have a healed or quiescent tubercular lesion somewhere in him, or a tubercular gland, that to all intents and purposes was walled off from the rest of the body and inactive, and that this could be lighted

up by a tuberculin injection and cause a reaction, and yet his present pleurisy be non-tubercular in origin.

Consequently, with or without a positive diagnosis of a tuberculous focus, or that the pleurisy was due to tuberculosis, the clinical evidence that a pleurisy, tuberculous or non-tuberculous, predisposes to tuberculosis of the lungs, should cause the axioms of the treatment of pleurisy with effusion to be as follows:

1. With pain or without pain in the chest, with dyspnea or without dyspnea, with cough or without cough, when suspicion is attracted to the lungs of a patient a careful physical examination should be made with the chest and back completely bared.

2. If pleural effusion is found it should not be allowed to remain in the chest more than a few days, even if there is not much dyspnea and not much displacement of the heart, unless the amount of the fluid is small and this amount is gradually diminishing.

3. It is perhaps wise not to remove all the fluid, but if the fluid rapidly reaccumulates it should certainly be again withdrawn.

4. A patient who has had pleurisy with effusion and has apparently recovered should be treated as though he were in the pretuberculous stage of pulmonary tuberculosis; in other words, he should have a longer or shorter period of rest and fresh air treatment, if possible. If such rest, during this stage of suspicion, is not a monetary possibility, his lungs and his general condition should be carefully examined at least once a month, for a year, before deciding that he is probably safe from tuberculous sequences.

---

### PULMONARY HEMORRHAGE

The question of the proper treatment of this condition or emergency constantly recurs and it seems to be necessary to reiterate the advice that the blood pressure should not be raised by such drugs as ergot, digitalis, etc., with the idea of stopping the bleeding. All hemorrhage from the lungs, unless it is from an aneurism, tends to stop, but the proper treatment for the condition is to lower the blood pressure with nitrites. At a recent meeting of the American Therapeutic Society, in

Philadelphia (May 7-9, 1908), Dr. Lawrence F. Flick, Philadelphia, stated in a paper which he read on the treatment of tuberculosis that whenever he found a pulmonary second sound accentuated or increased in force he put the patient immediately on nitroglycerin, and in this way he believed he minimized the danger and frequency of hemorrhages.

Dr. Albert P. Francine, in the *Pennsylvania Medical Journal*, January, 1908, very ably discusses the treatment of hemoptysis. He uses the official spiritus glycerylis nitratis in one-minim doses immediately on the occurrence of pulmonary hemorrhage, and repeats the dose at two-hour intervals, or oftener in severe cases, and in severe hemorrhage has given a minim (two drops) every half hour for four or five doses. If the hemorrhage is alarming and the patient is nervous, he administers  $\frac{1}{4}$  grain of morphin with  $\frac{1}{150}$  grain of atropin, hypodermatically. It is often advisable to use morphin to quiet the patient's nervousness in pulmonary hemorrhage, but  $\frac{1}{8}$  grain, or one-half the above, is almost invariably sufficient. If this small dose is administered atropin is then not needed to stimulate the respiratory center or to prevent the overaction of the morphin, and, as it is a vasoconstrictor, it is best not to administer it.

Francine lays down the usual rules for the immediate treatment of this condition, viz., absolute rest, flat on the back with one or two pillows as the patient prefers. Talking must be forbidden. No warm drinks, alcoholic or otherwise, are allowed, and no solid food is permitted. Cracked ice in small amounts may be given to dissolve in the mouth, and perhaps a light weight, flat icebag may be put over the heart to quiet its overaction. Similar icebags may be placed over the site of the bleeding, if deemed advisable. Strapping the chest on the affected side and limiting its mobility is sometimes of service, and Francine speaks of the occasional necessity of bandaging hemorrhage cases. If this is done the bandages should be loosened gradually and not all at once, so that too much blood will not be thrown into the lungs at one time.

It is probably rarely advisable in pulmonary hemorrhage to do transfusion with blood, salt solution, or any other solution, or even to do hypodermoclysis.

Francine thinks that after the arrest of the hemorrhage the patient should be kept in bed at least ten days. This, of course, depends on the amount of the hemorrhage and its cause. He advises the usual treatment to prevent hemorrhage, viz., the administration of calcium chlorid or lactate, and the feeding of gelatin, as a jelly. He cautions against using large doses of calcium chlorid too long, as it tends, in large doses, to interfere with the coagulation of the blood. This caution was concurred in by Dr. Meyer Solis-Cohen, of Philadelphia, in discussing Francine's paper; he stated that Dr. A. E. Wright, of London, has shown that when large doses of calcium chlorid are given for some period, the coagulation of the blood is interfered with. Therefore, after two or three days of the ordinary dose of calcium chlorid, it is well to suspend its administration.

| R.                      | gm. or c.c. |         |
|-------------------------|-------------|---------|
| Calcii chloridi .....   | 5           | gr. lxx |
| Acaciæ granulatae ..... | 15          | or 3iii |
| Aquæ cinnamomi .....    | 100         | 3iii    |

M. et Sig.: A teaspoonful, in plenty of water, every three hours.

Calcium chlorid, in spite of the mucilage, is irritant to the stomach and sooner or later causes considerable irritation, consequently the following tasteless preparation is the better:

| R.                    | gm. |         |
|-----------------------|-----|---------|
| Calcii lactatis ..... | 6   | or 3iss |

Fac chartulas 20.

Sig.: One powder, with water, every three hours.

## ASTHMA

In the first place, the disease asthma should be dissociated from conditions which are termed asthmatic. A patient may be asthmatic from various causes, but the term asthma should be limited to the disease or condition itself, i. e., periodic attacks of bronchial spasm. More or less continued dyspnea, with or without whistling râles, and with or without acute attacks of asthma, may be caused by cardiac disease, cardiac asthma; by renal insufficiency, renal asthma; by plethora, causing attacks of acute hyperemia of the lungs; by arteriosclerosis; emphysema; diabetes; thyroid disturbances,



and by the various anemias. Spasmodic asthma may be caused by bad heart attacks; by acute toxemia from renal insufficiency; by exacerbations of gout, probably due to a toxemia from nitrogenous mal-metabolism; by acute indigestion, and by gastrointestinal irritants causing a swelling of the mucous membranes of the bronchial tubes, really an urticaria. This swelling of the mucous membrane of the bronchial tubes has been caused by diphtheria antitoxin.

### CAUSES

The diseased condition, or neurosis, termed true asthma, is often due to irritation of the nose and throat, and sometimes of the ear; is frequently due to chronic bronchitis, often is concomitant with acute disturbances of the mucous membranes of the upper air passages, as when caused by irritations from pollen, such as hay fever, rose fever, and by various dust and drug irritants. Asthma, however, is frequently a neurosis alone, not being caused by any one particular condition or irritation. This is pure "cussed" asthma and has been termed the "epilepsy of the lungs." Probably these unexplained attacks of asthma are caused by some irritant in the blood similar to the exciting cause of an epileptic attack. Such irritations being removed or prevented, the frequency of the attacks will be diminished. However, like epilepsy and like migraine, a habit of asthma having been formed, even after the early exciting cause has been removed, the nervous centers having become accustomed to the periodic discharge of excessive energy, will often continue this vicious habit. Consequently, like a beginning *petit mal*, and like a beginning eyestrain headache, little mild recurrent attacks of asthma should be inhibited, if possible, at the beginning, lest the patient be condemned to suffer for years, or a lifetime, from recurrences of this terrible condition of real asthma.

An attack of asthma generally occurs at night, and may be preceded by headache, some symptom of indigestion, mental depression or nervous irritability. There is at first some slight dyspnea and a short dry cough. The dyspnea and consequent cardiac distress increase, and the agony suffered by these patients can not be un-

derstood unless one has seen them suffering from an attack of this terrible disease. The agony is almost as great as that of acute cardiac dyspnea, although there is not so much mental anxiety. The patient may be pale or almost livid, and the expression of the face shows the suffering due to attempts to inspire, and then to expire, through the contracted bronchial tubes. The muscles of inspiration being stronger than the muscles of expiration, for a time more air enters the lungs than can get out, and little by little there is increased chest distention. Percussion shows hyper-resonance. The greatest amount of wheezing, as shown by the stethoscope, is in expiration, and the expiration is prolonged in the attempt to empty the lungs and prepare them for the next inspiration. If the bronchial secretion begins, as it generally does, moist râles may also be heard, and, after a series of spasmodic efforts, the cough brings up white glairy mucus.

#### PATHOLOGY

The pathology of the condition is a spasm of the bronchial tubes. To what distance and to how small bronchi this spasm extends can not be well decided. No one should contend that the mucous membrane of the bronchial tubes may not suddenly swell and this swelling alone, obstructing the passage of air into the deeper portions of the lungs, cause an asthma. Such is doubtless the condition in certain poisonings by drugs that cause urticaria and in the rare instances of antitoxin poisoning. Also it is not only probable but a fact that sooner or later in an attack of asthma the mucous membranes become more or less congested from the upset condition of the usual differences in the pressure within the lungs or without the lungs, which is so readily understood if one recognizes that the right side of the heart has lost its aid from the usual negative pressure in the lungs. This congestion of mucous membranes, of course, soon means exudate, and exudate means more or less mucous and watery secretion. But this is only an incident in ordinary asthma, the spasmodic contraction of the bronchi is the cause. This is not true of the asthmatic conditions caused by circulatory disturbances. Such asthma may be caused more

by sudden hyperemia of the mucous membrane of the lungs than by the spasmodic contractions, but true asthma is as above described.

During the attack little rice-like particles, which are white and gelatinous, are often coughed up and have been called "*perles*" of Laennec. These little pellets may sometimes be unfolded, as first described by von Curschmann, into little spiral strings of mucin, some of which may be wrapped around a globule of mucin. These *perles* probably originate in the smaller bronchial tubes. Sometimes, also, sharp octahedral crystals are found in the expectorated matter. These are known as Leyden's or Charcot's crystals. Whether or not in certain patients these crystals, or these pellets, of mucin are the cause of the attack of asthma has not yet been determined, but some patients are more or less asthmatic as long as these little affairs or objects are found in the sputum. When they are no longer present the cough ceases, the little bronchitis which the patient has had ceases, and the asthma may be absent for a shorter or longer period of time; then a recurrence of the condition generally takes place. If the blood is examined during the attack or shortly after, frequently a greatly increased number of eosinophiles are found. This would seem to denote gastrointestinal irritation.

The length of these attacks of acute asthma, if unrelieved, varies from an hour or two to all night, and sometimes an attack may last several days. Occasionally the attacks last for many hours, or even days, in spite of all treatment, and any temporary relief given by powerful drugs may not prevent the resumption of the asthmatic spasm the moment the patient is out of the influence of the drug. The amount of dyspnea that the patient has, and the amount of suffering and the seriousness of the attack, do not bear a close relation to the amount of wheezing that is heard. A patient may not suffer greatly from dyspnea so long as he is sitting upright, and yet be wheezing like a decrepit old horse.

The longer the paroxysm lasts and the more intense it is the greater the danger of permanent injury to the heart and the greater the danger of the distention of the chest, so injuring the lung tissue as to make the emphysema permanent. Even after repeated attacks most pa-

tients have no cardiac injury and no lung injury, but this is doubtless because most of those who suffer from acute asthma are young; the older patients do have more or less lasting bronchitis, heart debility and more or less constant dyspnea and often emphysema. It is rare for a patient to die during an attack of acute asthma, but the condition should always be considered serious, as it could never be decided how much future disability was caused by the prolongation or repetition of such serious disturbance of the vital functions of respiration and circulation.

Acute attacks of asthma may occur every night for a series of nights, and then not for a long period, or after one attack there may be no more for some time, or they may occur more or less periodically, or they may recur only at certain periods of the year or in certain places. These last are likely to be due to nasal irritations. The attacks may also occur more or less frequently for several years, or even for a lifetime.

#### GENERAL TREATMENT

The treatment of this troublesome disease, or condition, will never be a success unless the cause has been determined, and, if possible, removed. Hardly any patient with any disease should receive a more careful general examination than the asthma patient. The lungs must be carefully examined for bronchitis and emphysema, and more serious conditions found or eliminated, and the blood pressure taken. The digestive ability of the stomach and intestines should be investigated, the urine should be examined, and all possible reflex causes sought in the throat, nose or ears. If all tangible causes of the asthmatic attacks have been eliminated, a careful analysis of the excretion of the various salts and solids in the twenty-four hours' urine, on a known diet, should be made. Even careful examinations of the feces, on a known diet, may give conclusive evidence of the cause of the toxemias that give rise to asthma. So much for negative evidence.

Positively, asthma is caused by polyps in the nostrils, hypersensitive mucous membrane in the nostrils, hypertrophy of the Schneiderian mucous membrane, adenoid conditions of the nasopharynx, lingual tonsil irritations,



and tonsil irritations and concretions, by growths or irritations in the larynx, chronic bronchitis, emphysema, insufficiency of the right side of the heart due to various cardiac lesions, arteriosclerosis, hyperacidity of the stomach, intestinal sluggishness and the absorption of toxins therefrom, insufficient urine excretion, amenorrhea, hypothyroidism, i. e., insufficiency of the thyroid, gout, diabetes, and uremia. Asthma also occurs when no amount of investigation can discover a cause other than the intangible condition of a neurosis.

Certainly, the cause being ascertained, the prevention of the action of that cause, if possible, is the height of the scientific treatment of asthma, and it is obviously unwise and unscientific to give all kinds of recommended drugs for the prevention of asthma when the etiologic factor has not been determined, and, finally, by a long process of trying one drug after another, find something that will, perhaps, benefit the patient. Such treatment is just as obsolete as is the administration of large doses of quinin in continued fever, and if the quinin does not prevent the progress of the disease, decide that the fever is typhoid.

#### DRUGS IN ASTHMA

Perhaps the most frequently successful drug in preventing the recurrence of asthma is an iodid, and this is probably because most asthma is due to affections of the air passages, and this drug is specifically a stimulant to the mucous membrane of the nose, throat and bronchial tubes. If any chronic disturbance is located in these mucous membranes the iodid tends, first, to increase the exudate from these membranes, then to make the mucus more liquid, and, while at first apparently irritant, soon relieves congestion of these membranes, and often, sooner or later, cures a chronic congestion and causes the membrane to become healthy. Hence the frequency of success from iodid simply emphasizes the necessity of a careful examination for, and the removal, if found, of any nasal obstructions or irritations. After such removal, a sensible treatment to prevent the recurrence of attacks would be the prolonged administration of iodids, and very large doses are seldom needed, or if the history of the attack shows long standing of the



disease, the treatment of the neurosis by bromids is advisable, and here again the dose should not be large. We should not produce debility either with iodid or with bromids.

The patient under the administration of either drug should be carefully watched, and if no weight is lost and the digestion is good, we may continue such treatment for some time, gradually reducing the drug as the attacks of asthma are inhibited. For the prolonged use of either iodids or bromids the sodium salts are the best, as sodium does not cause muscle debility and is not poisonous to living tissues, as is potassium. In asthma due to chronic bronchitis, and in asthma with but little bronchitis, but with the repeated expectoration of the round gelatinous particles, the prolonged use of iodids seems to have the best curative effect.

Arsenic, a so-called alterative drug, seems at times to have a specific action on the organs of respiration. In chronic bronchitis, in asthma, and in catarrhal conditions of the air passages, arsenic, when given for a long period, is sometimes of considerable benefit. The respiratory ability and freedom from colds and coughs of the arsenic eaters of France and the Alps is well known.

A local cause in the upper air passages having been removed, if there was any such, besides treatment either by iodids or bromids, if either one is deemed advisable, anything that will improve the general health of the individual should be utilized. An occupation in which there is an atmosphere of dust or other irritant should be changed for one more suitable. Perhaps indoor work should be changed for outdoor work, perhaps the climate or location should be changed. Any indigestion, gastric or intestinal, should be corrected; constipation should be prevented; anemia should be treated, and insufficiency of the thyroid, if present, should be noted and modified.

If asthma recurs at certain periods of the year as does hay fever, the preventive treatment is the same as for hay fever. Anything that will reduce the nasal irritations and congestions will relieve the asthma, and any change in location that will prevent the hay fever will generally prevent the asthma. To just what locality or climate an asthmatic patient should be sent is difficult

to determine. Also, it is impossible to predict that, because one patient is benefited by a sojourn or residence at one particular place, that place will be beneficial to the next patient. Theoretically, regions free from dust and vegetation should be the regions to prevent attacks of asthma. Sea voyages are sometimes beneficial and sometimes not. The decision as to whether or not benefit will be derived from certain regions may often be determined by a careful investigation into the condition of the patient's mucous membranes and the condition of his circulation.

Anything that would tend to make the circulation better in the mucous membranes of the upper air passages and diminish congestion and tumefaction of the mucous membranes of all the air passages will tend to prevent recurrences of asthma. Cardiac insufficiency, of course, should be properly treated, and whether the heart needs digitalis or the arteries need nitroglycerin or nitrites continuously, or whether the general good effect of ergot on the circulation is needed (and asthma may sometimes be prevented by ergot) must be determined by a careful study of the individual patient.

Insufficiency of the kidneys as a cause of asthma should be treated by the proper diet and the prevention, if possible, of nitrogenous toxemias. Such asthma is an indication of nitrogenous poisoning. The asthma due to gout is often best combated with thyroid, and when there is insufficiency of the thyroid in young individuals, which may be recognized by well-known signs, such as amenorrhea or scanty menstruation in women, an unusual and undesirable increase of fat, a dry condition of the skin, and a tendency to nitrogenous poisonings, the asthma will be benefited by small doses of thyroid, perhaps, coincidentally administered with small doses of iodid, as iodid has been shown to be the most active stimulant of the thyroid gland.

#### TREATING THE PAROXYSM

The best treatment of the paroxysm of asthma must be decided by a careful study of each individual patient. There is no one best treatment for the asthmatic attack. The drug that most frequently is successful in rendering the patient comfortable and shortening the par-

oxysm is, of course, morphin, but before the physician begins the treatment of the asthmatic attacks with morphin he should have exhausted his other resources, as he is not sure that he can cure the asthma, even if he removes the reflex cause, and such patients readily acquire the morphin habit. If a given patient is incurable under the surroundings and conditions in which he must live and no other drug will relieve his suffering, he doubtless has the right to receive morphin, even if he does form the habit.

In endeavoring to abort or shorten the attacks we may have recourse to the narcotics, which relieve the paroxysm by inhibiting the reflexes and dulling the receptive centers. Such drugs are morphin, bromids, chloral, and chloroform by inhalation.

Lobelia is depressant both to the circulation and to the nervous system, and can only be of value in sufficient dose to cause actual depression. It acts similarly to chloral and bromids, and probably no better.

Grindelia robusta depresses the circulation and depresses the nervous system, and is a narcotic. It also dilates the pupils. Consequently the action is not very dissimilar to chloral. It has often been used in bronchitis and asthma and in whooping cough to relax or prevent spasm. It has no advantage over chloral or bromids.

We may use drugs that dull the peripheral nerves and prevent their susceptibility to the irritation from which they are suffering and thus abort the paroxysm. Such drugs are mostly of the atropin group, as belladonna, stramonium and hyoscyamus. The effective action is atropin action, and doubtless atropin, and perhaps scopolamin (hyoscin) will do all the good that the crude drugs can do, although inhalation of the fumes from burning stramonium leaves has been used with success for centuries.

We may consider the treatment with such drugs as cause muscular relaxation by prostration. Such are emetics, and nicotin with patients who are not used to its action.

The next group of drugs whose action we consider in the treatment of asthmatic attacks are vasodilators. These drugs not only dilate the peripheral blood vessels

and therefore relieve congestion in the mucous membranes of the respiratory tract, but also are preventers of muscular spasm. Such are, of course, the nitrites in the form of amyl nitrite, sodium nitrite, and nitroglycerin. The iodids will also cause lowered blood pressure, but are hardly of value during the attack.

Many times quite the reverse of this dilating, relaxing treatment is indicated in an asthma paroxysm. The vasoconstrictors are indicated, and if used in these instances will abort the attack. The best are suprarenal solutions sprayed on the mucous membranes of the nostrils or throat, or into the larynx, or a suprarenal or adrenalin tablet may be dissolved and absorbed in the mouth. The action is of course immediate, and sometimes so is the relief. For the nostrils adrenalin spray solutions of from 1 to 10,000 to 1 to 5,000 (diluting with a mild alkaline solution) may be used. In the throat and larynx a strength of 1 to 3,000 may be used. Digitalis is sometimes of advantage in these attacks even if there is no cardiac lesion or cardiac debility. Intramuscular injection of an aseptic preparation of ergot is also sometimes efficient treatment in stopping the paroxysm.

Citrated caffein, or strong coffee, or strong decoctions of tea are of benefit during the asthmatic attack in some individuals. The favorable action of caffein must be due to the cardiac stimulation and possibly to stimulation of the respiratory center.

Strychnin given hypodermatically has been much recommended for the asthmatic attack. While it generally fails, it sometimes does a great deal of good to patients who have bad heart action. A combination of strychnin, morphin, and atropin given hypodermatically sometimes seems to act better than when the strychnin is omitted. Arsenate of strychnin in doses of perhaps 1/40 of a grain three times a day has been recommended in chronic asthma. This drug is very active and may cause unpleasant symptoms.

Almost from ancient times paroxysms of asthma have been treated by the inhalations of fumes from burning medicinal substances. For this purpose the medicated substance may be in the form of cigarettes, powder, cones, or papers. Sometimes the fumes of these burn-



ing powders are directly inhaled, or the patient's bedroom is allowed to become filled with the fumes. Sometimes the attack is relieved by the inhalation of steam, or the vapor of boiling water in the room of the patient adds some relief. Sometimes liquid medicaments are added to boiling water in various apparatus for inhalation. Most popular, however, and most frequently used are the powders or papers, or pastils that are burned near the patient's face and inhaled directly.

Probably nearly all the powders or papers ordered by physicians for inhalation for asthma and almost all of the patented preparations and nostrums contain niter (saltpeter) and stramonium, or belladonna, or other atropin-containing drug. The action of the niter, i. e., potassium nitrate, fumes is to cause relaxation both of the blood vessels and of the bronchi. Papers are saturated with solutions of potassium nitrate, and when dry may be rolled in the form of a cigarette and smoked, or may be burned in any other form, and the fumes are beneficial to some patients. The addition of potassium nitrate to other medicinal powders causes them to burn more readily and give off their fumes.

Stramonium (leaves) is the most frequent form in which the alkaloid atropin is administered by inhalation. The action of the atropin thus locally applied is to dull the irritability of the peripheral nerves in the nose, throat and larger bronchial tubes, and thus by relieving irritation tends to relieve spasm. At the same time the atropin acts as a circulatory stimulant.

Various combinations of drugs are used for inhalation for asthmatics, many of which are nostrums (but have been analyzed) and have more or less efficiency in relieving the attack, because of the potent drugs often recklessly employed. The asthma nostrum vendor is looking mainly for immediate results, and he cares little what the danger to the patient may be or how strong a dose he gives; consequently, he orders used sufficient amounts of the drugs to cut short the asthmatic attack. Therefore, the prescription which a physician is willing to write may not be so successful in a certain case as the nostrum temporarily may be.

A French asthma cigarette contains the following ingredients.



|                        |                |
|------------------------|----------------|
| Belladonna leaves      | 5½ parts       |
| Hyoscyamus leaves      | 2¾ parts       |
| Stramonium leaves      | 2¾ parts       |
| Phellandrium aquaticum | 1 part         |
| Extract of opium       | ⅛ part         |
| Cherry laurel water    | A sufficiency. |

—(Yeo).

The dried leaves are cut small, mixed well, and moistened with the opium which has been dissolved in the cherry laurel water. A small amount of potassium nitrate is added in order that the cigarettes may burn readily.

Arsenical cigarettes also have been used by asthmatics, sometimes beneficially. Yeo says that "these are made by dissolving 15 grains of arsenite of potash in half an ounce of distilled water and saturating unsized paper with it. This is afterward dried, cut up into twenty pieces, each of which is rolled up into a cigarette. The smoke from the cigarette must be drawn into the bronchial tubes by a slow inspiration." It certainly is not obvious how arsenic can shorten an asthmatic attack. The administration of arsenic in small doses for some time may prevent the development of asthma, and chronic bronchitis is sometimes benefited by the prolonged use of arsenic.

Oxygen inhalations have sometimes been used by asthmatics, and with relief. This, however, is not very dissimilar to breathing the outside air, and will, of course, partly relieve the oxygen starvation. A patient who must go to the window and gasp for breath should, perhaps, have an oxygen tank in his room to use when he needs it.

It has been suggested (E. L. Smith, *Medical Record*, June 29, 1907) that some of the good effects of the inhalation of niter and stramonium are due to the vasoconstriction that the irritation of the fumes causes in the asthmatic areas, these being mostly in the nostrils.

There are various combinations of potassium nitrate, powdered stramonium, belladonna, and hyoscyamus leaves with aromatics, and anise seems to be the preferred spice.

The following is an example:

| R.                       | gm. |            |
|--------------------------|-----|------------|
| Potassii nitratis .....  | 15  |            |
| Pulveris anisi .....     | 15  | or 55, 3ss |
| Pulveris stramonii ..... | 30  | 3i         |

M. et fac pulverem.

Sig.: Ignite a thimbleful of the powder and inhale as directed.

Many inhalants for asthma contain cocain, but these are probably mostly solutions for nebulizing.

Cocain certainly entered into the constituency of many of the nostrums for the cure of hay fever and asthma, but not as many now as formerly, since most states compel the label to declare that cocain is present. Patients having learned to be more or less fearful of cocain do not buy the nostrums so readily, unless they have already acquired the habit. Consequently cocain has been taken out of many of the patented medicines.

If we were to sum up the best treatment for the paroxysm of asthma we must say morphin and atropin hypodermatically, the administration of nitroglycerin by the mouth, adrenalin or other suprarenal sprays into the nostrils or throat, or tablets containing suprarenal dissolved in the mouth, fumigations with potassium nitrate and stramonium, and cocain applications and sprays, if must be.

### HAY FEVER

In this, as in most diseases, the aim is prevention, and before the periodic attack occurs, long before if possible, the patient's nose should be thoroughly examined for localized irritations and hyperesthetic areas, and these should be cauterized or removed as deemed best by the nasal specialist.

If, in spite of the building up of the general health and the local preventive measures, the attack of hay fever recurs, then before the date of the beginning of the disease the patient should, if possible, go to a region where he has found that he is more or less immune. As the disease seems to be caused by the pollen or irritants in the atmosphere, produced or blown from various flowers and weeds, the ideal spot for these patients is one where there is little vegetation. Some patients do well in the mountains, some at the seashore, some on island resorts, some on sea trips. There generally can

he found a region in which a patient is fairly immune, and to that he must resort annually.

If the attack develops, sedative measures, cleansing measures and general systemic treatment must all be inaugurated. Simple cleansing alkaline sprays give some relief. Many patients are made better with weak solutions of suprarenal, perhaps 1 part to 10,000 of the active principle of suprarenal in physiologic salt solution, or in an alkaline solution such as the liquor antisepticus alkalinus, diluted with an equal part of water, or in Seiler's tablet solution, each tablet being dissolved in 30 c.c. (2 fluidounces) of water. Such a suprarenal solution may be used repeatedly. It causes no habit and will generally give temporary relief. In a few instances the reaction from its use causes more or less congestion, and in such cases of idiosyncrasy it should not be used. Sometimes an ointment of adrenalin chlorid in a pure white vaselin or petroleum (1 to a 1,000) is efficient in causing temporary relief. A drop or two of this is put into the nostril and the contraction of the mucous membrane from the absorption of the adrenalin is sometimes as great as when adrenalin spray is used and often more lasting. Adrenalin chlorid tablets, containing 0.002 gram, allowed to dissolve on the tongue, relieve the congestion, especially in asthmatic cases, and will also relieve the asthma in these cases. Thin oil sprays containing adrenalin chlorid are also at times of value.

There is no justification for the use of cocain as a spray or application if it is to be used frequently in hay fever or in any other nasal condition. The danger of forming the habit is too great.

Antipyrin, quinin and various other local sprays have been recommended and used, but rarely are they of any aid in hay fever.

The local application of various pollen preparations and pollen serums have not been of sufficient advantage to warrant their recommendation as specifics, although occasionally a patient may be benefited by such treatment.

Internally, the following drugs, although failing as many times as they benefit, should be tried in each case that is otherwise incurable, viz.: quinin, atropin, strychnin, antipyrin, iodids and thyroid.

Quinin is sometimes of benefit in large doses, rarely in small doses. Its action when helpful is similar to that in certain cases of urticaria, perhaps as an antitoxin.

Atropin to be of value must ordinarily be given to the point of slight physiologic effect, such as dryness of the throat, increased rapidity of the heart, and flushing of the face. In susceptible individuals the pupils may also be dilated. The atropin treatment is certainly unpleasant, and minute doses are generally of little value. Occasionally a patient is benefited by 1/300 or 1/400 of a grain three or four times a day. Such treatment should be tried until it is found valueless.

Sometimes strychnin given in ordinary doses is of benefit. This is especially true in patients who are much weakened, and have a good deal of passive congestion or sluggish circulation in the mucous membranes.

Antipyrin can only be of value when given in sufficient dose to act as an antispasmodic, much as it acts in whooping cough. It may possibly act as an antitoxin to the irritant from the pollen, and may be of benefit when there are asthmatic symptoms. The dose for an adult, to be of value, must be 0.50 gram ( $7\frac{1}{2}$  grains) three or four times in twenty-four hours. It is well to combine with this treatment the coincident administration of digitalis. If the condition is tedious and prolonged it would rarely be wise to give the antipyrin through the whole period of the disease. If patients suffering from this disease have weak acting hearts, digitalis may benefit them, unless they have some arteriosclerosis, in which case it is ordinarily better not to use it.

In some patients iodids in small doses act for good in causing increased secretion and preventing some of the intense swelling of the mucous membranes. In other patients the condition is made rapidly worse. Sometimes a very small dose of an iodid, as 0.05 gram (or 1 grain) three times a day, after meals, or a small dose of thyroid as 0.05 gram (or 1 grain) of the official thyroid powder three times a day will increase the secretion, dilate other blood vessels and relieve the local congestion. This is especially true in asthma and hay fever after fifty, and where there is gout.

As in asthma, the diet should be very simple. Any extra gastrointestinal irritation will certainly intensify the hay fever symptoms. For the same reason the bowels should be thoroughly moved daily, perhaps best by a gentle saline, as phosphate of soda.

Sometimes the hay fever manifestations are improved by treatment similar to that of uricacidemia, i. e., by a vegetable diet, one as free as possible from purin bases, and the administration of alkalies. The alkali may be potassium citrate or a similar drug. The benzoate of soda may be of value, and often small doses of effervescing Rochelle salt, as 1.00 gram (15 grains) three or four times a day, are of benefit.



# DISEASES OF THE CIRCULATORY ORGANS

---

## MYOCARDITIS

Dr. W. W. Kerr, San Francisco, in the *California State Journal of Medicine*, January, 1908, well treats this subject. He enumerates the causes of myocardial degeneration as follows:

1. Secondary to valvular lesions.
2. Due to infections.
3. Due to errors in diet and food metabolism.
4. Due to disturbances of the excretions or of the internal secretions.
5. Due to cachexia following malignant growths.
6. Due to general senile decay.

He presents the etiologic causes to demonstrate that myocardial weakness should not be treated by routine methods. While digitalis, for instance, is very valuable in certain conditions, it is harmful in others. Absolute rest for a time is often necessary, and baths are valuable, and sooner or later regulated exercise is advisable. However, the difference "between exercise and exertion" should be distinctly explained to the patient. Exercise to the point of dyspnea or cardiac tire should never be allowed.

## FOLLOWING VALVULAR LESIONS

1. Myocardial debility from the first cause is doubtless the result of passive congestion of the cardiac muscle from obstructed circulation in the coronary veins. This condition is also brought about by emphysema or prolonged asthma, and is the reason why the muscle of both sides of the heart becomes degenerated, although perhaps from the valvular lesion but one side of the heart is overworked. The treatment for such a condition consists in rest, baths, finally graded exercise, and digitalis from first to last. Digitalis slows the heart, and thus prolongs the muscle rest, allowing it to re-

cuperate. Secondly, by increasing the contraction of the heart it not only raises the blood pressure in the aorta, thus increasing pressure in the coronary arteries, but also by completely emptying the right auricle, allows the coronary veins to thoroughly empty into that cavity. Also the firmer contraction of the cardiac muscle eliminates the products of its own metabolism and the nutrition of the heart muscle improves.

#### FROM INFECTIONS

2. Kerr would subdivide the myocardial changes due to infections into two classes: Those "in which the changes are the result of the influence of the toxin directly on the cardiac muscle and those in which the infection affects the coronary arteries and induces secondary changes in the muscle fibers." Under the first heading he includes such infections as diphtheria, rheumatism, smallpox, typhoid, erysipelas and pneumonia, and he wisely states that no remedy is so efficacious as tincture of the chlorid of iron in preventing the development of cardiac weakness during the course of these infections. Typhoid and syphilis he thinks are the two infections which most frequently induce changes in the coronary vessels that may terminate in a myocarditis, and he finds that the best treatment for such patients is the prolonged use of moderate doses of iodid of potash. Digitalis ordinarily should not be given in the cardiac weakness due to infections, at least not during the acute stages. In fact, it is a good working rule never to give digitalis during acute feverish processes.

#### DIETARY ERRORS

3. Disorders of digestion from overeating or from intestinal fermentation, or from mal-action of the liver, are now well recognized as causes of myocardial changes. The toxins thus circulating in the blood seem to have a deleterious action on the cardiac muscle, hence when such toxins are considered the cause of cardiac debility, the food taken, and the manner in which it is digested, and the way in which the products of metabolism are excreted should be the object of careful study. Such study should include careful repeated analyses of the twenty-four hours' urine to determine what products are

well excreted and what are retained in the body, and the diet arranged accordingly. No one diet can be laid down as the best for this condition, but the diet should be made to suit each individual patient. Kerr advises three meals a day, and each meal to be of equal amount as far as quantity and nutritive value is concerned. He does not believe in one light meal and one or two heavy ones. Of course, alcohol should be interdicted. A glass of hot water the last thing at night and whatever is necessary for the proper evacuation of the bowels in the morning is good treatment. Kerr obtains benefit in this kind of cardiac trouble from small doses of mercury, and believes that the alterative effect of  $\frac{1}{4}$  of a grain of the protoiodid three times a day, for ten days or a month, is beneficial. If there is edema or dropsy he gives digitalis. If there is gout he gives colchicum.

#### DISTURBED SECRETION

4. Bright's disease is the most prominent example of a disturbed excretion causing myocardial degeneration. This condition has been thoroughly discussed and the treatment described in *THE JOURNAL* for Feb. 8, 1908, page 465.

Increased thyroid secretion in Graves' thyroid disease or exophthalmic goiter (a misnomer, as Graves' disease is often present without exophthalmos), always causes myocardial weakness. How much is due to the excessive rapidity with which the heart is driven in this disease, or how much is due to the action of toxins in the blood, cannot be determined. But little can be done for the heart in this condition until the thyroid disease is surgically or medicinally improved. Cardiac tonics are of but little value in aiding the heart, although strophanthus may be of some benefit.

In Addison's disease of the suprarenal glands cardiac debility soon develops, and the treatment of the heart is, of course, useless unless the disease of the adrenal glands becomes arrested.

#### DUE TO MALIGNANCY

5. The asthenic condition of the heart due to malignant growths is part of the general anemia and debility that is caused by the disease. There is a toxemia.

and as long as the toxins cannot be removed we can only temporarily aid the heart with cardiac tonics, as digitalis, and cardiac stimulants, as strychnia, and perhaps temporarily inhibit the profound anemia by administering iron.

#### SENILE DECAY

6. Senile myocardial changes are often the result of an endarteritis of the coronary arteries. This condition is likely to be associated with mal-metabolism of the food, and is often associated with imperfect excretion. The diet should be carefully regulated to fit the needs of the individual, and the urine studied to note the ability to excrete nitrogen and salts. An old man generally requires but little food, and on a diminished and carefully regulated diet he will circulate less toxins, and his heart muscle will not be thus debilitated, and the arteriosclerosis may be made to progress slowly or not to progress at all. The medicinal aids to inhibit the progress of a general endarteritis are often vasodilators such as small doses of iodid of potash or nitroglycerin in small doses, and Kerr finds arsenic of value. If the heart is decidedly weak, small doses of digitalis may be given in conjunction with nitroglycerin, thus preventing the contraction of the arterioles caused by the digitalis. Strychnin is also often of value in this myocardial debility.

The best preparations of digitalis are the tincture and the infusion. The unofficial active principle, digitalinum, does not always seem to represent the whole activity of the drug. If digitalis is to be given hypodermatically, digitalin is the best preparation to use, in dose of  $1/100$  to  $1/50$  of a grain (0.00065 to 0.0013 gm.), but when digitalis can be administered by the mouth, preparations of the crude drug act best. The dose of digitalis is always *enough*, i. e., enough to obtain its physiologic action. It is well to begin medication with digitalis, unless there is some special urgency, with small doses, and gradually increase the amount until the full physiologic action is reached. In this way the heart is not suddenly stimulated to act beyond its strength. Overaction of digitalis is shown by the heart being too much slowed, or by its action becoming irregular or rapid; by nausea and vomiting; by a full, tight

feeling in the head; and by a diminution in the output of urine. If any one of these symptoms develop, digitalis should ordinarily be stopped.

R. c.c.  
Tincturæ digitalis ..... 25| or fl̄ʒi  
Sig.: Ten drops, in water, three times a day, after meals.

This dose is small and should be increased sufficiently to obtain physiologic effect.

Or:

R. c.c.  
Infusi digitalis ..... 200| or fl̄ʒvi  
Sig.: A teaspoonful, in water, three times a day, after meals.

This dose may be increased to two teaspoonfuls or more if needed to obtain physiologic effect.

When an iodid is deemed advisable, the potassium or the sodium salt may be used, and either may be given in a saturated solution or in a solution of which a dose would be a teaspoonful.

There is no syrup or tasteful menstruum that will well disguise the taste of an iodid. It is much better to give these preparations in water and allow the patient to take them either in milk or effervescing water, or in any solution that he may prepare to suit his taste, or he may follow the drug with any taster that he desires.

R. gm. or c.c.  
Sodii iodidi ..... 20| or 3v  
Aquæ q. s. ....ad saturandum | q. s. ad sat.  
M. et Sig.: Five drops, in water, three times a day, after meals.

[Each minim represents about .065 gram or 1 grain of the drug.]

Or:

R. gm. or c.c.  
Potassii iodidi ..... 6| or gr lxxv  
Aquæ ..... 100| fl̄ʒiii  
M. et Sig.: A teaspoonful, in water, three times a day, after meals.

If it is deemed advisable to give mercury, it may well be given as a protoiodid, in the form of tablets, as:

R.  
Tabletas hydrargyri iodidi flavi, āā, gr. ¼. No. 50.  
Sig.: One tablet three times a day, after meals.



Strophanthus is best given in the form of the official tincture, with a beginning dose of five drops, and arsenic in the form of Fowler's solution, in small dose, as two drops, three times a day, after meals.

If nitroglycerin is deemed advisable, unless there is need for its quick action, as in angina pectoris or in cardiac dyspnea when relief of the peripheral circulation is immediately necessary, the dose should be small, and is best given directly after a meal, unless a more frequent dosage is needed. It should be understood that much lowering of the blood pressure in conditions of arteriosclerosis is not tolerated by patients who have become accustomed to high blood pressure. On the other hand, small doses, as even  $1/400$  of a grain three or four times in twenty-four hours, more if needed, will often relieve a laboring heart, cardiac pain and dyspnea. If there is cardiac weakness, even if arteriosclerosis is present, small doses of digitalis combined with nitroglycerin medication, as pointed out by Kerr, gives the most successful treatment.

---

### ANGINA PECTORIS

A great deal is written and a great many recommendations are made concerning the treatment of this acute and dangerous condition, but in the true disease there can be but little diversity of opinion as to the best means to allay the pain and relieve the heart.

The patient should be left in the position that he finds the most comfortable, or in which he can breathe the best. If he is in bed, a hot water bag held in the region of the heart, not having the weight on the heart, often gives some relief. The best immediate treatment is a whiff or two of a few drops of nitrite of amyl, or the patient may dissolve on the tongue a nitroglycerin tablet containing  $1/100$  of a grain. Either of these may be acting while the physician prepares a hypodermatic injection of morphin and nitroglycerin, omitting the latter if he has decided that enough vasodilator action has occurred from either the nitrite of amyl or the nitroglycerin on the tongue. Except in instances of profound depression, or when there are diseased kidneys

or other contraindications to morphin, there is nothing in this condition that will give better results than its hypodermatic administration. The dose should be from  $\frac{1}{8}$  to  $\frac{1}{4}$  of a grain, depending on the size of the individual and the intensity of the paroxysms of pain. If  $\frac{1}{8}$  of a grain is given, it could, of course, be repeated in an hour. The nitroglycerin, if it seems best thus to administer it, may be added to the same hypodermic syringe in doses of  $\frac{1}{100}$  of a grain.

If the attacks of pain recur, a certain amount of vasodilatation should be continued with nitroglycerin by the mouth at three, four or five hour intervals, as seems best, but soon three or four times in twenty-four hours will be a sufficient amount. While the actual dilating effect of nitroglycerin is short, the good effects from its action certainly last a number of hours. If severe pains recur, it may be necessary to repeat the morphin.

As soon as the patient has sufficiently recovered from the acute attack, the bowels should be evacuated as deemed best, either by an enema, glycerin suppository, or, if the patient's condition is good, by a calomel or castor oil purgative. Effervescent or saline laxatives that require a large amount of water for solution should generally be avoided in acute angina pectoris.

During the next few days the nutrition should be taken in small amounts, at three or four hour intervals, not too hot and not too cold. Even liquids should be taken in small amounts, not in large bulk at a time.

The subsequent treatment of angina pectoris is that of its cause, and as there is generally an arteriosclerosis or cardiovascular-renal disease, the treatment of that condition may be referred to in *THE JOURNAL*, Feb. 8, 1908, page 465.

---

### PERICARDITIS

The pericardium, like any other serous membrane, may suffer from an acute, subacute or chronic inflammation. There may be only sufficient exudate to produce a dry pericarditis, or there may be an effusion in the pericardium more or less in amount, which is generally serous, though, in rare cases, it may become purulent.

From dry pericarditis, or after the absorption, or after the evacuation of the serous or purulent exudate, or from an injury, adhesions may form and a condition of adherent pericardium results.

A primary pericarditis is rare. It is generally a secondary condition either to an acute infection, and most frequently inflammatory rheumatism, or to a chronic condition, most frequently chronic nephritis. The development is often insidious, at times even without pain, and in diseases such as follicular tonsillitis, which may be rheumatic, acute inflammatory rheumatism, chorea, and cerebrospinal meningitis, the heart should be daily examined so that beginning inflammation, either pericardial or endocardial, may be immediately discovered. The pericardial friction murmur is diagnostic, but this pericardial rubbing may not always be painful, and, in fact, may not be the source of pain. When effusion is present pain may be troublesome, showing that it is due to internal disturbance of the heart.

Pericarditis causes but little fever unless it is a complication of some feverish process. More or less dyspnea and cardiac anxiety occur and become marked if much effusion takes place. The heart sounds will become muffled when there is much effusion, and the pulse becomes weak and rapid on the least exertion. If there is much pressure on the heart there is dyspnea and even cyanosis, and the condition is then serious. If the inflammation is prolonged, a myocarditis may develop and the heart may become dilated from the weakening of the muscles. When an enlarged cardiac dulness with cardiac dyspnea is first noted during the course of a chronic disease it is often difficult to diagnose possible fluid in the pericardial cavity from a simple enlarged dilated heart, hence great care should be taken before it is decided to aspirate supposed liquid from the pericardium.

The prognosis of pericarditis as a complication of acute diseases is generally pretty good unless other conditions render the prognosis serious. The pericarditis that sometimes occurs in the latter stages of chronic nephritis is serious and often causes a fatal termination. When there is considerable exudate around the heart there is danger from sudden syncope at any time.

## TREATMENT

The objects of treatment are: to remove the cause, if possible; to shorten the inflammation, and to prevent or get rid of the exudate. The indications to meet, then, are to treat the cause if we know it, to give as much rest to the heart as possible, to stop pain, to allow no reflex irritation to come from the gastrointestinal canal, and later to remove the effusion.

To meet the first indication we should treat the cause, whatever it may be, as we would if the pericarditis were not present. This is especially true of rheumatism with the precaution of not giving salicylic acid in too large doses or too long, when there is inflammation either of the endocardium or pericardium.

Absolute rest mentally and physically is an imperative necessity, as everything that increases the number of the heart beats increases the irritation of the pericardium. Enough morphin should be given hypodermatically to stop whatever pain is present, and pericardial pain generally requires but small doses. In the beginning of the inflammation an ice bag placed directly over the heart often seems to inhibit the inflammation and to prevent an effusion. As soon as an effusion has taken place the ice bag should be removed. If the heart is rapid, and it has not been injured by a long-continued feverish process which has caused a myocarditis, and if there is no renal or arteriosclerotic reason that digitalis should not be given, it certainly, in small doses, is advisable in pericarditis. If, for instance, a heart is pulsating 100 times a minute and small doses of digitalis reduce this to 80, this means 20 beats less per minute, or 1,200 less in an hour, and 28,800 less in twenty-four hours, which means that much less irritation to the inflamed pericardial membrane.

There is not very frequently sufficient effusion in the pericardial cavity to require paracentesis, but if there is much cardiac anxiety and dyspnea, or if the exudate is large in amount and is not quickly absorbed, aspiration should be done, of course with the greatest possible care. The best point for puncture has not been agreed on by all authorities, some advising that the needle be introduced between the third and fourth ribs at the left margin of the sternum, while Rotch prefers the right



fifth interspace, and others advise doing paracentesis exactly in the region of the normal apex beat, the heart, of course, having been displaced by the fluid. Dr. Samuel West, in the *British Medical Journal*, Oct. 26, 1907, gives the safest advice, as far as the heart is concerned, for the withdrawal of pericardial fluid. He advises that the needle be inserted "between the extreme limit of the cardiac dulness in the axilla and the place where the apex is determined to be." It is obvious that the heart itself could not be injured by following such advice. The objection to this position is that the pleural cavity may be punctured and fluid from the pericardium might then be allowed to enter this cavity. West says he has seen such accidents occur, but has never seen any serious results from it.

The patient should be in a recumbent or at least semi-recumbent position, this position favoring the sinking of the heavy heart away from the chest wall. The fluid should be drawn very slowly and the pulse carefully watched. A rapid evacuation of the fluid might cause collapse. If the fluid is found to be purulent it must at once be evacuated and a decision then made as to the best surgical methods to be employed.

If death seems imminent from the laboring heart during the course of pericarditis or any other acute cardiac condition, venesection may be not only justifiable but life-saving.

If the amount of pericardial fluid believed by clinical symptoms and signs not to be purulent does not diminish day by day, various methods are used to promote its absorption. Diuretics or diaphoretics are of but little use, and especially the latter are inadvisable on account of their prostrating effect on the patient. Daily saline purgatives, not too active, with a diminution of the amount of liquid allowed the patient will generally cause the fluid to be absorbed. At this stage blisters over the heart, small in size and perhaps several in number, seem also to promote absorption. If these methods do not promote absorption and the heart's action is good, either with or without digitalis, the fluid should be removed by aspiration. If an intermittent fever is present without assignable cause, the presence of pus in the pericardium must be suspected and the



aspirating needle inserted for diagnostic purposes as well as for the removal of the fluid.

If after most of the fluid has been absorbed and the cardiac dulness has returned to nearly normal but still is larger than it should be, or if friction sounds are heard, or in conditions of dry pericarditis, it is advisable to give small doses of an iodid three times a day for a considerable period. The best preparation is the sodium iodid in a dose of 0.20 gram (3 grains) three times a day, after meals. It is also advisable to paint the precordium with the tincture of iodine once a day for several days, not allowing the skin to become hardened or blistered. Later, rubbing in a small amount of the ointment of potassium iodid is beneficial.

As soon as the acute inflammation is over general tonics and iron in some form, in small amounts, are needed, and as the condition improves the local resolution and absorption are completed. Of course during the acute stage of pericarditis, and for a considerable time after, the bulk of food or nutrition taken should be limited and gastrointestinal indigestion prevented. In other words, it may be found that milk, even during the acute stage, is not a good diet, if it causes gastric flatulence, a coated tongue, and constipation. The kind of diet the patient should receive depends on the amount of temperature.

After the patient is apparently well great care should be taken to prevent any exertion that could cause heart strain, since, as previously stated, the heart muscle is weakened by a pericarditis as well as perhaps by the cause of the pericarditis.

# DISEASES OF THE NERVOUS SYSTEM

---

## INFANTILE PARALYSIS

Acute anterior poliomyelitis, though by no means a frequent disease, occurs more frequently unrecognized than any other serious disease of young childhood. The difficulty of its recognition is that a mild attack may leave such slight symptoms that at first the localized muscle debility is not discovered. The future welfare of the muscles affected depends so much on the early recognition of the presence of the disease and its proper treatment that too great care cannot be exercised in testing the condition of the four extremities of a child who has had a sudden unexplained febrile attack. Epidemics of this disease occur, but it appears sporadically probably in all parts of the United States. The age of its occurrence is most frequently from 1 to 3 years and it is rare after 5 years of age. It is doubtless a germ disease, which seems to develop most frequently in the summer months, and strikes without premonition as rapidly as does fulminating cerebrospinal meningitis.

While most children attacked by the disease have high temperature, vomiting, headaches, and muscle aches, and are acutely ill, others may not be known to have been attacked until it is found that one or more extremities are paralyzed. Convulsions may occur, and the fever symptoms may last from twenty-four to seventy-two hours. There is then rapid improvement in all the muscles except those that are permanently involved. The legs are more likely to be involved than the arms, and a leg more frequently than an arm. If this paralyzed leg is not properly treated the muscles will atrophy, muscle and nerve degeneration will take place, and contractures of the muscles will occur.

Dr. David T. Bowden, Paterson, N. J. (*Journal of the Medical Society of New Jersey*, November, 1908), describes a series of cases of this disease which he saw

during the epidemic of 1907, and from his experience advises the following line of treatment:

If the child is seen during the acute or fever stage he would give a calomel purge, encourage sweating by hot packs, hot drinks and hot blankets, and if the fever were high would administer an antipyretic. He speaks of using leeches, but does not say where he would apply them. After the fever stage he would keep the little patient as quiet as possible, would wrap up the extremities that have lost their proper circulation in flannel and cotton, and as soon as the tenderness of the muscles had subsided would use gentle massage and muscle kneading, together with electricity. As soon as any contractures in muscles or tendons were noted he would use passive counteracting movements and such apparatus as would prevent deformities.

The form of electricity to use depends, of course, on the ability of the muscles to react. If they react to the faradic current that would be the one to use. If they were so debilitated as not to react to the faradic current, then the continuous current with regular interruptions should be used. Electricity and massage should be kept up continuously for a long period until there seems no further improvement in the muscles. Even in neglected cases it is astonishing how much can sometimes be done by proper massage, passive motion and electricity. If any deformity is starting or is present, an orthopedic surgeon should be consulted and the best possible apparatus applied, while the electricity and massage are kept up.

Bowden urges that no operation should be done in the way of tendon cutting until it has been thoroughly demonstrated that apparatus and physical measures are not successful in diminishing the deformity.

---

### ACUTE CHOREA

Although there is nothing new in our knowledge of the best treatment of this disease, it may be well to rehearse our present understanding of chorea, as well presented by Charles H. Scribner, Patterson, N. J., in the *Journal of the Medical Society of New Jersey*, February, 1909.

The pathologic disturbance which causes the muscular movements which are termed chorea seems to be principally located in the brain, and the great variety of movements and their generalization in severe cases of chorea show that there are irritations in various parts of the cerebral cortex and basal ganglia. The symptoms referable to cerebral irritations are, besides the muscular movements, mental irritability, sleeplessness, troublesome dreams, night terrors, impaired memory, and various hallucinations of sight, taste, and smell. Besides anemia and disturbed menstruation in young girls, often amenorrhea, a most frequent complication is endocarditis.

It is probable that chorea is due to an infection, and this infection is doubtless closely associated with the micro-organisms that cause acute inflammatory rheumatism. There is no reason to believe that the disease of chorea is contagious, but neither is rheumatism. Still, it is wise to isolate a child, not only for its own sake, but on account of other children involuntarily mimicking the movements of the patient, and imitative chorea is an accepted condition.

The earlier the patient is taken from school and put to bed in good hygienic surroundings, or, if the case is very mild, taken where, with the least exertion, noise and confusion, he or she may have the most fresh air and sunlight, the less likely is the chorea to be severe.

#### MEDICINAL TREATMENT

The success of any medicinal treatment must be judged by the accepted fact that chorea is self-limited, and the intensity of the symptoms will abate in from two to four weeks. Arsenic, in the form of Fowler's solution, the dose being increased by one minim a day until the full physiologic effects are obtained, is the treatment that is most lauded and many times apparently the most successful. On the other hand, it often fails, and it is possible that in the many mild cases in which it apparently succeeds it is successful only because the disease is self-limited. Doubtless many cases of neuritis and blood deterioration have followed in the steps of chorea because too much arsenic has been used, and it certainly does not seem advisable, in a disease

that is apparently self-limited, to give a poison in sufficient amount to produce poisoning to attempt to shorten the disease. Scribner says that as soon as the lids become puffy, or gastrointestinal symptoms develop, the dose should be decreased again to the starting point.

To reiterate, it does not seem advisable to use a drug so foreign to the system as arsenic to the point of serious symptoms (and it should be remembered that when puffing occurs under the eyes from arsenic there is also generally albumin in the urine). When, during its administration, choreic movements cease, it is by the self-limitation of the disease, or by the arsenic causing some debility of the nerves, if not an actual neuritis.

Scribner states that antipyrin is one of the most valuable of drugs in lessening muscular activity and easing the pains that may be present in the muscles and joints. This drug is valuable in relieving muscular contractions, but must be given in good doses and not continued too long, and if during its action the heart is protected with small doses of digitalis it certainly is not any more dangerous a treatment than is arsenic.

The salicylates and salol (the latter in small doses) are as valuable in chorea as is arsenic, and they would certainly seem indicated when there are painful and swollen joints, as frequently occurs in chorea.

If the movements from the disease are so severe as to cause injury to the patient, or even to endanger life from continuous sleeplessness, Scribner advises the chloral treatment. Chloral for this purpose, according to Forchheimer, "is given in five-grain doses every four hours the first day, and two and one-half grains are added to each dose the second day, and these second-day doses are repeated on the third day until the proper effect is produced. This means that the patient should be kept asleep until the choreic movements have ceased for about twelve hours." The amount of chloral administered on this plan sometimes may be enormous, considering that it is a child that is generally being treated. Of course the heart should be carefully watched, but it generally withstands the treatment well. Forchheimer states that, in his experience, "this treatment has always resulted in one of two ways: either the child wakes up



cured (i. e., without any form of chorea), or the grave form has been converted into the mild form."

Scribner says that the extreme danger to life of the severe form of the disease, and the really wonderful results of the chloral treatment, justify the risk.

---

## EPILEPSY

Lest too much reliance be placed on the administration of drugs in this disease, it is well for us to consider the statements made by Dr. William T. Shanahan, assistant physician at the Craig Colony for Epileptics, Sonyea, N. Y. (*The Dietetic and Hygienic Gazette*, March, 1909). He says that the three great essentials in the management of epilepsy are the diet, hygiene, and occupation, and that it is only after these have been arranged to the best possible advantage of the patient that medicinal treatment is to be considered.

## DIET

To ascertain the best diet for the individual epileptic, the gastric and intestinal digestive powers should be thoroughly investigated, and to do this properly, the twenty-four hours' urine and the feces should be carefully examined. Such examinations, at least if several times done, will disclose many errors in metabolism, which may be prevented by treatment, management, or a radical change in the diet. The digestive system being made as perfect as possible, the toxins that so often are the instigators of epileptic attacks will not form, be absorbed, and circulate in the blood. Not only should the kidneys and intestines be made as nearly as possible perfect excretory organs, but the skin should be made as active as possible by massage and exercise.

Of course all epileptics should avoid alcohol, and often tea and coffee. Rich, greasy, highly seasoned foods, or indiscretions as to amount, should not be allowed to occur in the dietary of an epileptic, and special care should be exercised that the epileptic receives nothing but the freshest and most properly cooked food.

If, in spite of corrections in the diet, intestinal fermentation and putrefaction occur, the various culture preparations of lactic microbes may be administered, or

yeast often acts to advantage in preventing such intestinal conditions. Radical changes in diet—from a mixed diet to a vegetable diet, or to a milk diet, or to a temporary buttermilk diet—may aid in eradicating the disturbance in the intestine.

Constipation should certainly never be allowed in epileptics, and drugs may be administered to prevent it, if must be, although of course it is best to prevent constipation by diet, exercise, and by drinking plenty of water. The best laxative, if one must be given, must be determined by the individual patient. If, in spite of ordinary laxative drugs or laxative treatments, the feces tend to remain long in the intestines, active catharsis with calomel or castor oil must be caused periodically. With such persistent constipation the advantage of the administration of sweet oil, and of the high injection into the colon of warmed sweet oil should be remembered.

#### MEDICINAL TREATMENT

Shanahan says that for the control of the epileptic seizures, bromin or its salts still hold an important place. He does not state which bromid he prefers, but sodium and potassium are probably the best. If plenty of water is drunk to make the skin and kidneys active, if the bowels move well daily, and if the skin is properly bathed, and good, healthy out-door exercise is taken, the disturbing symptoms of bromism will not develop, especially as the large doses once given have been found unnecessary. If salt (sodium chlorid) is more or less thoroughly removed from the diet, it has been found that the bromin salt, perhaps preferably sodium bromid, takes its place, and less bromid is needed to control the frequency of the epileptic seizures. Shanahan cautions not to stop suddenly the administration of large doses of bromids.

He also states that if the excretory organs of the patient are kept active, the condition of status epilepticus, or rapidly repeated seizures of epilepsy, will not occur; hence the prophylactic treatment is the best. Such a condition, however, being present, he says that chloral hydrate must be used; it is best given by enema and its retention may be aided by laudanum. He

does not say how much is generally needed, but states that it should be used with caution, and exhaustion guarded against by the use of stimulants such as aromatic spirits of ammonia, and enemata of strong black coffee, at a temperature of from 100 to 105 F. If needed, he would also give physiologic saline solution intravenously or by hypodermoclysis, and if there is much cardiac depression he uses strychnin, digitalis, and *strophanthus*.

At the onset of the status epilepticus, gastric and intestinal lavage are often of value. Venesection may be used in plethoric patients, and lumbar puncture has been tried, but with only questionable success. If the epileptic seizures are rapid and severe, chloroform inhalations may be administered until the chloral has had time to absorb from the rectal or colon injection.

Of course in treating any individual epileptic, an attempt should be made to correct any physical disability that may be present. Adenoids and enlarged tonsils should be removed; decayed teeth should be cared for; eyes should be fitted with glasses, if they require it; hemorrhoids should be removed, if present; pelvic disturbances in females must be prevented, medicinally, if may be, or operatively if must be.

Shanahan does not speak of the disturbances of menstruation being a frequent cause of epilepsy in girls and women, nor of the advantage of the administration of thyroid both as an emmenagogue and as a preventive of nitrogen poisoning. It is a fact that many female epileptics may be greatly improved and even cured with general management and the proper administration of thyroid.

---

## HEADACHE

Of all painful conditions this is the most frequent and the one that is the least tolerated; hence the nostrums for its treatment are legion.

It should be the aim of the physician to make a diagnosis of the cause of a headache. The acute headaches occurring in feverish processes may be due to increased temperature and the increased rapidity of the heart causing an actual increased cerebral pressure, or may be due to a toxemia from the products of infection.

Anything that reduces the temperature, lowers the blood pressure, and cleanses the intestines of feces, products of fermentation, putrefaction, and old bile, will relieve this kind of a headache.

If the headache is due to cerebral hyperemia without fever, anything that will relieve the blood pressure, as dilating the peripheral blood vessels, or putting the feet into a hot bath, will be efficient treatment.

If the headache is due to cerebral excitement (often perhaps caused by an increased blood pressure), it will be relieved by anything that lessens cerebral activity, as bromids and chloral.

If the headache is due to venous congestion, as from cardiac insufficiency or from arteriosclerosis, nitroglycerin by dilating the superficial blood vessels may be expected to relieve the headache. Posture and the addition of another pillow at night will often relieve this headache. If, with cardiac insufficiency, there is headache when the patient is up and about, digitalis may relieve it.

Headache may also be due to anemia and low blood pressure, as in neurasthenia. In these conditions a slight serous exudate may occur at night in the brain similar to that which occurs in the extremities during the day. Such headaches are relieved by iron, sometimes by vasoconstrictors, and at times by calcium.

The most frequent causes of toxic headache are constipation, intestinal fermentation, kidney insufficiency and liver insufficiency. In the first instance free daily movements of the bowels, and such dietetic and medicinal treatment as to prevent fermentation will also prevent the headaches. In kidney or liver insufficiency the diet should be so arranged as to allow the easiest metabolism and the most perfect elimination of waste products, and the headache will be less.

Actual inflammation of the meninges of the brain is, of course, the cause of intense headache. Such headache can only be combated by narcotics and the inhibition of the inflammation. If the pressure from the products of inflammation or exudation becomes sufficient to allow of draining by spinal puncture, this may relieve the headache, even if there is not sufficient fluid to cause coma.

The persistent headache from a cerebral tumor can only be cured by the removal of the tumor, or, perhaps, by trephining and thus relieving cerebral pressure.

The headaches of post-epileptic attacks may be due to a slight exudate in the ventricles of the brain, or to a congestion of the meninges, and will generally be relieved by bromids.

The terrible, typical migraine attacks are also perhaps due to toxic irritants circulating in the blood much as are the unexplained epileptic attacks. Such headaches are relieved only by stronger narcotics and time. Such attacks, as well as epileptic fits, may be prevented by the most perfect possible regulation of the stomach and intestines and such modification of the diet as will prevent the formation and absorption of toxins.

The post-alcohol and post-ether headaches are probably due to exudates into the cerebral cavities, and the toning up of the circulatory system with ergot, digitalis and strychnin would seem to be the best treatment.

Of all causes of headache far and away the most frequent is eye-strain. While there are a few enthusiasts who go too far with the eye reflex theory as a cause of many nervous disturbances, and while it is not necessary under the discussion of headaches to prove or disprove or defend other reflexes that may occur from eye tire, it is a positive, incontrovertible fact that defective eyes cause more headaches than all other causes put together. Unfortunately, if this cause is not corrected early in life before the headache habit has been acquired, the human neurotic mechanism so readily develops a nervous habit that the headaches recur throughout life.

It is not to be understood for one moment that a headache should be considered ocular unless all other more serious causes have been excluded. Such causes having been excluded, a careful consideration of when, how and why the patient has headaches should so impress the investigator with the probability of ocular defect that he should insist on his patient consulting an oculist before allowing him to become a chronic headache sufferer, or to seek help from physician to physi-



cian, or to take "patent medicines" for relief. The eyes of such patients should be carefully examined and ocular defects found or excluded.

It should be carefully impressed on the patient that if an ocular defect is found, and if apparently the right lenses are given him, that, in the first place, the decision of the exact ocular defect, even by the best ophthalmologists, is not absolute, and that it is no more an exact science than is internal medicine, and that an eye showing a defect to-day may show a different defect a few months or even a few weeks hence. The patient ought also to understand that he should have the prescription for lenses put up, and then have the lenses adjusted to his eyes by the very best optician he can find. He should also be told, if he has astigmatism, that the least bending of the frames of his glasses or spectacles will not only make the correction *nil*, but perhaps cause more eye pain and headache than he had before. Hence astigmatic lenses should be frequently straightened by the optician. The patient should also be told that however perfectly his lenses fit his eyes now, a year or more hence they may not fit at all. Consequently, careful examination of a patient with headaches having proved to both the physician and the consulting oculist that the trouble is due to eyestrain, should cause that patient to remember that it is the oculist to whom he should look for the cure of a recurrence of his headaches.

Considerable time has been spent in discussing the prevention of eye headaches for the reason that eyestrain is the most frequent cause of headaches, and their treatment by the laity is making weak hearts; and weak general circulation is becoming the bane of the treatment by medical men of all acute disease or post-operation conditions. This is due largely to the fact that civilized people frequently take large amounts, or repeatedly take small amounts, of coal-tar antineuralgic drugs, and the most frequent cause for the taking of such drugs is headache. Consequently, anything that will prevent frequent headaches will prevent many unnecessary deaths. The amount of acetanilid, antipyrin,

and now phenacetin (acetphenetidinum) that is consumed in this country is enormous, mostly through the medium of nostrums, especially headache powders and tablets. Though the pure food and drug law now compels the proper labeling of such products, the laity still does not understand the dangers from these drugs, or their pernicious action on the heart and blood. From an ordinary dose death does not often occur, but, unfortunately, the deteriorating action on the blood and circulation from these drugs goes on unrecognized, and they have now become the most frequent cause of anemia, neurasthenia and general circulatory debility in this country to-day.

It is hardly necessary to mention the reflex head pain that may come from a bad tooth, from an inflammation in the antrum of Highmore or the frontal sinus, or from inflammations in the ear, as these diagnoses of causes of headache should be readily excluded.

It should be remembered that frontal headache is frequently caused by syphilis.

It should also be remembered, if there is insufficient pulmonary ability, whether from tuberculosis, emphysema, pleurisy with effusion, or asthma, that this lack of proper aeration may cause headache.

At times gastric hyperacidity and uterine displacements may be reflex causes of headache, but such causes are rare.

The wearing of heavy hats and heavy masses of hair may be the cause of headaches in girls and young women, to say nothing of the pernicious spotted veil.

#### FOR HEADACHE

| R.                       | gm. |           |
|--------------------------|-----|-----------|
| Caffeinæ citratæ .....   | 2   | 3ss       |
| Sodii bromidi .....      | 20  | or 3v     |
| Sodii bicarbonatis ..... | 10  |           |
| Acidi tartarici .....    | 10  | āā, 3iiss |
| M. et fac chartulas 10.  |     |           |

Sig.: One powder in half a glass of water, and repeated in six hours, if needed.

[In order that these powders may effervesce well they must be kept dry.]

Or:

| R.                       | gm.   |              |
|--------------------------|-------|--------------|
| Acetanilidi .....        | 50    | gr. viiss    |
| Caffeinae citratæ .....  | 25 or | gr. iv       |
| Sodii bicarbonatis ..... | 5     |              |
| Acidi tartarici .....    | 5     | āā, gr. lxxv |

M. et fac chartulas 5.

Sig.: One powder, in half a glass of water, every three hours, if needed.

[In order for these powders to effervesce well they must be kept dry.]

Or:

| R.                       | gm.   |            |
|--------------------------|-------|------------|
| Acetphenetidini .....    | 1 50  | gr. xxiiss |
| Caffeinae citratæ .....  | 25 or | gr. iv     |
| Sodii bicarbonatis ..... | 5     |            |
| Acidi tartarici .....    | 5     | āā, lxxv   |

M. et fac chartulas 5.

Sig.: One powder, in half a glass of water, every three hours, if needed.

[In order for these powders to effervesce well they must be kept dry.]

Or:

| R.   | gm.         |
|--|-------------|
| Pulveris potassii bromidi effervescentis (N. F.) | 100 or ʒiii |

Sig.: A heaped teaspoonful, in a glass of water, when needed.

[Each such teaspoonful represents 0.60 (10 grains) of potassium bromid.]

Or:

| R.                                       | gm.          |
|--|--------------|
| Pulveris potassii bromidi effervescentis |              |
| cum caffeina (N. F.)                     | 100  or ʒiii |

Sig.: A heaped teaspoonful, in a glass of water, when needed.

[Each such teaspoonful represents 0.60 gram (10 grains) of potassium bromid and 0.065 gram (1 grain) of caffein.]

## A STIMULANT IN CEREBRAL DEPRESSION

| R.                                | gm. or c.c. |
|-----------------------------------|-------------|
| Caffeinae sodio-benzoatis (N. F.) | 4  or ʒi    |
| Aquæ menthæ piperitæ              | 100  ʒiii   |

M. et Sig.: A teaspoonful, in water, every four hours, if needed.

[Caffein sodio-benzoate consists of equal parts of caffein and sodium benzoate.]

Or, to effervesce:

| R.                                    | gm. |           |
|---------------------------------------|-----|-----------|
| Caffeinæ sodio-benzoatis (N. F.)..... | 2   | 3ss       |
| Sodii bicarbonatis .....              | 10  | or        |
| Acidi tartarici .....                 | 10  | ãã, 3iiss |

M. et fac chartulas 10.

Sig.: One powder, in half a glass of water, every four hours, if needed.

## SCIATICA

The sciatic nerve is one of the frequent locations of nerve pain, and is perhaps more frequently the location of a neuritis or a perineuritis than any other nerve of the body. All possible causes of the condition must be sought for and found or excluded, and before a general condition, or a condition of the blood, is decided to be the cause of the neuralgia or inflammation, all local reasons should be excluded.

A frequent cause of sciatica in women is pressure on the nerve in the pelvis, either from uterine displacements, uterine enlargements, tumors or inflammation that has extended and caused pressure.

Constipation, with fecal matter remaining long in the lower bowel, is also a not infrequent cause of sciatica, and such a condition of the loaded sigmoid is a not uncommon cause of left-sided sciatic pain.

Gout and rheumatism certainly are many times the cause of sciatic neuritis.

Exposure to wet and cold, especially when the feet become wet and chilled, or sitting on cold stones, or long sitting on hard-bottomed chairs may be the initial cause of a sciatic neuritis.

Pain in the lumbar muscles, lumbago or lumbar myalgia, is often followed by pain in one or the other, or both sciatic nerves; or both conditions may be present at once. In fact, frequently when there is no evident abdominal or pelvic excuse, a lumbago is followed by pain in a sciatic nerve. A not infrequent cause of a lumbago is too lax springs and a too comfortable bed. This is especially true when the person is of heavy weight. A stiffening of the bed springs and a straightening of the bed will often be sufficient alone to stop this kind of pain which is so frequent, and also so frequently extends to the sciatic nerves.

A weakening of the plantar arch and an attempt of the person involuntarily so to step and stand as to relieve the ache in the ankles and feet will cause abnormal muscle tension, even of the thighs, and a sciatic pain can be caused from this reason, to say nothing of the frequent pain in the knees from this cause.

Uricacidemia, and even an increased acidity of the urine, with bladder irritability, is often a concomitant condition with sciatica. The sluggish circulation due to an imperfect heart action or to a varicose condition of the leg may be a predisposing cause of sciatic pain. It is hardly necessary to mention the occasional causes of sciatica, as diabetes, malaria, syphilis and hip-joint or knee-joint disease.

### TREATMENT

Consequently, before beginning any local or general treatment for sciatica, the patient should be carefully examined and any local cause found, the circulation investigated, the urine analyzed, and the intestinal digestion and activity learned. It should also be determined whether the pain is due to neuralgia, i. e., a simple irritation of the sciatic nerve, or whether there is an actual neuritis or perineuritis, which may be determined by excessive tenderness, pain on stretching the nerve (as by thoroughly extending the leg) or by a beginning anesthesia in any part of the distribution of the nerve.

It is not necessary to urge the necessity for removing local pressure, if such has been found, before it could be expected that the sciatica or the neuritis could be made better. Free elimination from a calomel, castor oil, or saline purgative, and subsequent daily free movements of the bowels is certainly a large factor in the successful treatment of sciatic trouble. The character of the diet should be determined by the condition of the patient. If the patient needs nutrition, the most nutritive diet possible should be given, and, in fact, perhaps hyperalimentation given. On the other hand, if the patient is plethoric, has been a high liver, eating largely of proteids, especially meats, a vegetable and limited diet for a time, at least, is the best. If the circulation is impaired, it should be aided. If the circulation is good, plenty of water should be given to aid the eliminative process by the kidneys. Hot daily tub baths, a



Turkish bath twice a week, or a body hot-air treatment twice a week, are all adjuvants in the treatment of sciatic inflammation that are far ahead of medicinal treatments. The body hot-air treatment is most efficacious when rheumatism is the cause of the condition, and no treatment is perhaps more successful. This is also especially true when there is kidney insufficiency. The promotion of the circulation in the skin and the increase of the excretory ability of the skin is a large factor in the benefit derived from such treatment.

Occasionally the attack of sciatica comes on suddenly, but generally it is gradual in its development, and the longer it has persisted the more difficult is it to cure; consequently, sciatica, even in mild form, should not be neglected.

It is probable that the shooting pains down the sciatic nerve, momentary perhaps in their duration, are caused by contractions of the pyriformis muscle, which compresses the sciatic nerve. It is also probable that this muscle sometimes becomes irritated and inflamed and keeps up, by its contractions, pressure on the sciatic nerve. If such pressure is more or less continuous, sciatic neuritis could be caused. This condition being surmised or suspected, local treatments aimed at relieving the spasm of this muscle should be instituted. Among such measures may be included static wave currents, mechanical vibration and sparks from a static machine locally applied to the region of the foramen through which the sciatic nerve leaves the pelvis. Also sometimes beneficial is the application of dry heat to this part, and perhaps best by the reflected heat and light of a strong electric light.

Sometimes counter-irritation along the course of the sciatic nerve by momentary localized applications of the galvanic electric current with the positive pole active, or painting along the course of the nerve with iodine, or electric light bath treatment to the whole course of the nerve, or dry cupping along the course of the nerve and repeated on successive days, will abort a beginning neuritis. In an ordinary case of sciatic neuralgia, if the cause is removed, the neuralgia will cease.

If beginning neuritis or perineuritis is suspected or diagnosed, absolute rest of the limb on a level, hard

bed, with electric light applications or dry heat applications, with the administration of alkalies or salicylate, and the general management of the bowels above outlined, may still abort the inflammation.

If, on the other hand, an actual neuritis is present, there is nothing that will shorten an attack so much as a long splint from the axilla to the heel, to give permanent fixation and rest. If a splint is used for this purpose, the bandage which binds it should be removed at least once, and perhaps better twice, a day and the limb gently flexed once or twice so that the joints will not become stiffened. The length of time such a splint should be used is determined by the amount of pain and the rapidity with which the inflammation improves. No fixed rule can be established. Another method of fixing and treating a limb so affected is by long sand bags, which may be put into the oven and rendered very hot, and changed as often as they become cool. Such applications give rest to the limb and constant dry heat. If such heat is not applied, the limb should be swathed in cotton and bandages, as warmth is very essential in all cases of neuritis.

When the pain is intense, and especially if periodical contractions of the muscles occur (which, however, are best prevented by the long splint), injections of morphin must be given. But perhaps nothing will prevent the necessity of such injections more than the ability to give the leg perhaps, but better the whole body, hot-air treatment, which, of course, can only well be done in an institution. The amount of morphin that is needed and the frequency depends on the pain. Such frightful pain can not be endured, and, if not stopped by other means, must be stopped by morphin.

Sometimes the injection of cold water or of a small dose of cocain directly into the nerve sheath in the region of the sciatic notch will cause almost instant cessation of the pain. If cocain is used hypodermatically, the dose would be from 0.008 to 0.015 gram ( $\frac{1}{8}$  to  $\frac{1}{4}$  of a grain), but it should not be often repeated, and it does not seem to be very advisable treatment. If cold water is used and reaches the sheath of the nerve and distends it in this region, of course, it will stop the sensations below, and such treatment sometimes precludes the necessity of the administration of morphin.

The coal-tar analgesics are only of temporary benefit in mild cases, are never of benefit when there is severe pain, and, as the need for an analgesic is so frequent in sciatic neuritis, great debility would be caused by such repeated use of them. Ordinarily, therefore, they should not be used in sciatic neuritis.

There is no really good reason for using atropin hypodermatically in sciatic neuritis. The pain of neuritis comes from the main trunk of the nerve and is distributed more or less to all its branches. Atropin only dulls nerve pain when that pain is due to peripheral irritation. If atropin is used in conjunction with morphin it does nothing but inhibit the narcotic and quieting effects of the morphin, and more morphin is required. Also, if the dose of morphin must be repeated for severe pain, the discomfort of the patient is increased, the restlessness is increased, and the secretions are decreased by the frequent repetition of atropin.

Osmic acid has been used subcutaneously in sciatica to the amount of 1 c.c. (15 minims) of a 1 per cent. solution. Perhaps the best method is to dilute the 1 c.c. (15 minims) of the 1 per cent. solution with sufficient water to allow of a series of injections, from five to ten, into the nerve trunk throughout its course, a few drops being instilled into the nerve sheath at each puncture. This method is, of course, painful, although it may be followed by good results, but the favorable action is possibly largely due to the "acupuncture" treatment and to the distention of the nerve sheath (nerve pressure) from the water. Therefore, if the sheath of the nerve is to be pierced at all, it would seem best to do this at the sciatic notch and instill sufficient water to produce anesthesia below.

It should be understood that a sciatic neuritis is like any other neuritis, and, therefore, will first grow worse, reach its acme, and then gradually and slowly become better, with anesthetics, pain, and more or less paralysis. The patient should be told that a long, tedious process is before him, and that no exact time limit to the duration of the inflammation can be promised.

After the acute condition is past, massage, possibly gentle counter-irritation, faradic stimulation of the muscles, or other electric or hydrotherapeutic measures may be used to bring the leg back to normal function.

It should be again emphasized that probably the most efficient means of shortening the inflammation in the nerve and hastening recovery is by the hot-air treatment.

As soon as the active symptoms have ameliorated, and especially if there is chronic sciatic pain, thermocautery treatment along its course, and repeated once in five days, causes efficient counter-irritation and frequently a cure.

Paralyzed muscles should be treated with such electric and massage treatments as is usual in other paralyses.

If the cause of the cured neuritis was a systemic one, such treatment should be carried out and persisted in as would tend to prevent a recurrence.

Tonics, especially iron, are indicated; fresh, warm air, if possible, and a convalescence long enough to restore complete health to the injured leg, are aids to a permanent cure.

As above stated, too much care can not be taken to positively cure an inflammation such as sciatic neuritis, which tends to recur and often causes permanent disability.

# DISEASES OF THE GENITOURINARY TRACT

---

## SPECIFIC URETHRITIS

Dr. James Pedersen, New York (*New York Medical Journal*, Jan. 23, 1909), discusses the treatment of acute gonococcic urethritis in the male. He emphasizes the well-acknowledged fact that there is no "best" treatment for this inflammation; in other words, there is no treatment that is the best for all patients.

While, theoretically, the most sensible treatment would be to place a patient with specific urethritis in bed, on a milk diet combined with bland alkaline drinks and free catharsis, it is obviously impossible, in the majority of instances, to carry out such treatment. Consequently it should be aimed to get as near as possible to such general treatment; in other words, the patient, besides what medication he may receive, should be told to walk as little as possible, lie down as much as possible, eat a bland, non-irritating diet, which means abstaining absolutely from alcohol, tobacco, coffee, tea, fried stuffs, much meat, spiced foods or condiments. The patient should drink freely of water or alkaline water, as vichy. He should also wear a suspensory bandage, and should be instructed in the most perfect cleanliness by the physician.

The aim of medication should be, as stated by Pedersen:

1. To influence the volume and reaction of the urine.
2. To render the urine more or less antiseptic.
3. To charge the urine with a medicament in solution which shall act on the inflamed mucous membrane.

## MAKE THE URINE ALKALINE

The first indication is met by the administration of alkalis to the amount of rendering the urine alkaline, or by the administration of sodium salicylate, salol



(phenylis salicylas) or saccharin to render the urine acid, if that is desired.

Mr. Reginald Harrison (*Lancet*, Feb. 8, 1908), reports a study of the condition of the urine in patients suffering from chronic gonorrhea; he seems to have demonstrated that sometimes, even without local treatment, the discharge will improve and the patient recover by the administration of phosphates, and does not believe that the improvement is due to the alkalinity of the urine, but to the phosphaturia.

Of course, it has been long known that acute urethritis is improved by the administration of alkalies; in other words, by rendering the urine neutral or alkaline. The best alkalinizers of the urine are the well-known potassium salts, the acetate, bicarbonate and citrate, and every physician has his favorite combination of these drugs. Any one of these salts is efficient if given in sufficient doses, though many physicians think a combination is better. The acetate is perhaps the most active alkali of the three, the bicarbonate the most disagreeable to take, and the citrate the pleasantest.

The urine is more readily rendered alkaline by the administration of the alkali directly after a meal, at which time the urine is the nearest to neutral on account of the production of hydrochloric acid in the stomach. The amount of an alkali that should be administered cannot be determined except by examination of the urine; in other words, if the object is to render the urine alkaline, enough should be given to cause that condition. Any of the following combinations are satisfactory:

| R.                      | gm. or c.c. |        |
|-------------------------|-------------|--------|
| Potassii citratis ..... | 40          | or 3i  |
| Aquæ .....              | 200         | fl ʒvi |

M. et Sig.: Two teaspoonfuls, in water, three times a day, after meals.

[The water may be flavored with an aromatic, as peppermint, spearmint, wintergreen, or cinnamon, if desired.]

It will often be necessary to administer the above dose more frequently than three times a day. Also, as an adjunct it is sometimes advisable to have the patient drink several glasses of artificial or natural vichy, or some other alkaline water, during the day.

Or:

| R.                          | gm. or c.c. |              |
|-----------------------------|-------------|--------------|
| Potassi acetatis.....       | 10          |              |
| Potassii bicarbonatis ..... | 10          | or āā, 3iiss |
| Potassii citratis .....     | 20          | 5v           |
| Aque cinnamomi .....        | 200         | 113vii       |

M. et Sig.: Two teaspoonfuls, in water, three times a day, after meals.

Alkalies should not be pushed long if there is considerable mucus coming from the bladder, or if there is bladder irritability, for it must be remembered that the bladder mucous membrane is accustomed to an acid secretion, and a continuous alkaline urine sooner or later causes irritability of the neck of the bladder, frequent micturition and even tenesmus. Also, if the urine becomes at all ammoniacal, the irritation of the bladder is made worse by alkalies, and the likelihood of deposits in the bladder is increased.

To meet the second indication there are no better drugs than salol (phenylis salicylas) or hexamethylenamin (urotropin), although drugs that meet the third indication also have some antiseptic properties.

#### COPAIBA, SANTAL AND CUBEBS

The drugs to meet the third indication are copaiba, santal wood and cubebs, and of the many balsams and genitourinary stimulants offered none are better than these drugs. The oil of santal is the best and fills every indication that any of the other balsams can fill, and with less irritation to the stomach or disturbance of digestion.

Whether the urine should be rendered alkaline or kept acid in gonorrhea is a subject of dispute, some authorities believing that alkalinity of the urine inhibits the growth of the gonococcus in the posterior urethra, while others contend that when the urine is acid the gonococcus will not invade the walls of the bladder. It seems certain, however, that if, in the beginning of the inflammation of acute gonorrhea, there is increased frequency of urine and burning, with marked ardor, that something must be done in the way of palliation, and, exclusive of hot sitz baths, absolute rest and a milk diet, nothing lessens this symptom so much as do the alkalies. Also, as pointed out by Pedersen, no great inhib-

ition of the gonococcus will be caused by any medication taken by the mouth and excreted by the urine; consequently, any germicidal treatment should be aimed at the infection in the anterior urethra before it has reached the posterior urethra or bladder. Therefore, any treatment that renders the urine alkaline during the first stage of acute urethritis, such as the reduction of the amount of meat ingested, the drinking of plenty of vichy, and the administration of an alkali, is of advantage in gonorrhea.

The best alkalies to administer are potassium acetate, potassium bicarbonate and potassium citrate. There is no special advantage of any one over the other two. The acetate is slightly more actively alkaline, the bicarbonate the most disagreeable to take and the citrate the pleasantest. This may be given as:

| R.                      | gm. or c.c. |        |
|-------------------------|-------------|--------|
| Potassii citratis ..... | 40          | or 5ix |
| Aquæ .....              | 200         | fl.ʒvi |

M. et sig.: Two teaspoonfuls, in water, three times a day, after meals and at bedtime. The same dose may be administered more frequently, if deemed advisable.

As soon as the first acute symptoms are over, the alkali should be stopped, as it is not well for a healthy condition of the mucous membrane of the bladder to keep the urine alkaline for any considerable time. At this time it seems well to begin the administration of salol or urotropin (hexamethylenamin), as thought best. If there is any irritation of the kidneys, salol, on account of one of its decomposition products being phenol, should not be used, phenol being irritant to the kidneys. If it is administered, it is well given as follows:

| R.                         | gm. |            |
|----------------------------|-----|------------|
| Phenylis salicylatis ..... | 5   | or gr.lxxv |
| Fac capsulas siccas, 20.   |     |            |

Sig.: A capsule every four hours.

As pointed out by Pedersen, as soon as posterior urethritis has developed, which occurs in the majority of cases of gonorrheal urethritis, one of the balsams is indicated, unless there is vesical irritation, as shown by great frequency of urination with small amounts of urine passed. For the reasons above stated santal oil

seems to be one of the best treatments and may be administered as follows:

R. Capsulas olei santali flexibiles, āā.....m. x  
No. 25.

Sig.: A capsule three times a day, after meals.

If there is no diminution in the amount of pus in the second glass of the two-glass test, and there are no symptoms of over-action of santal wood (viz., no pains referred to the ureters, or lumbar pains, and no special indigestion), two of these capsules three times a day may be taken.

It should be emphasized that no patient with gonorrhea can be well treated unless at each office visit he passes urine, that has been retained for at least three hours, into two glasses, he dividing the amount as nearly equally as his judgment permits. The washout from the urethra can thus be examined in the first glass, and the urine from the bladder and posterior urethra be examined in the second glass, and the conclusions thus arrived at will many times decide the treatment that is needed.

All balsam treatment may be stopped as soon as the posterior urethritis is cured. If, on the other hand, the posterior urethritis does not improve, the balsam may be increased in amount, or, if the posterior urethritis tends to become chronic, local posterior urethral treatment is indicated. It is also wise to demonstrate to the patient that, although the anterior urethral discharge may have ceased, he is not well until the posterior urethra is healed.

If it is preferred to use urotropin (hexamethylenamin) as a bladder and posterior urethra germicide treatment (and if the bladder becomes actually infected there probably is no better treatment), it may be given as follows.

R. Hexamethylenaminæ ..... gm.  
Fac chartulas, 20. | or 5iss

Sig.: A powder, in a glass of water, four times a day.

#### ORGANIC SILVER COMPOUNDS

Pedersen treats the anterior urethritis, which is the starting point of the gonorrhea, with injections of or-

ganic silver compounds, and believes that if there has not been a previous infection, and if the tissues are healthy, the gonococci may be caused to disappear from the discharge within a few days, even within forty-eight hours. While it may not be often possible actually to abort acute gonorrheal urethritis by this method, he believes that the first stage can be greatly shortened.

The silver compounds that may be used for this purpose are albargin, argonin, argyrol, novargon and protargol. The strength of the solution used is generally, at first, 1 per cent., which may be increased later, after the urethra becomes less sensitive, to 2 per cent. Pedersen injects a urethral syringe-ful into the anterior urethra, and has the solution retained from five to ten minutes, in the incipient stage of the disease.

The patient, of course, should be carefully instructed first how to pass the urine and then how to use the syringe and how to retain the fluid. The length of time that he should retain it depends on the length of time that there is burning after the injection has been evacuated. If the burning lasts a considerable time, the injection should be retained a shorter time. Unless there is a contraindication of much pain and burning, the retention of the silver solution for five minutes, and perhaps longer, is certainly more likely to allow the germicide to penetrate more deeply into the pockets of the urethral folds and kill the gonococci which are there hidden.

Pedersen advises the use of this injection "every three hours for the first twenty-four hours, and every four hours thereafter." Every fourth day he examines a smear of the discharge to see if gonococci are still present. As they diminish in number the strength of the fluid is reduced and the frequency of its injection is diminished from four times daily to only twice daily.

"After the gonococci have been absent from the discharge for from three to seven days (depending on the severity of the infection in the given patient) the injection is reduced to once a day, and from five to ten days



later (again depending on the patient) it is discontinued altogether."

This frequent injection of the urethra would seem a little strenuous for the patient, and might need to be modified if it had caused much swelling and inflammation. Pedersen does not speak of hot sitz baths if much inflammation or irritation is present. They are certainly of great advantage.

He does not believe that irrigation is often indicated in anterior urethritis, and we can but agree with him that there are only "two indications that justify instrumentation of an acutely inflamed urethra, viz.: retention of urine not yielding to all the lesser means for its relief, and extremely severe posterior urethritis." It is certainly not justifiable to give any great pressure to the delicate urethral membrane by any irrigation method. Such irrigations may not only force the gonococci into deeper tissues as well as into the posterior urethra and perhaps bladder, but may so injure the mucous membrane as to cause long protracted chronic inflammation and strictures.

As soon as the gonococci have disappeared and been absent for several days a continued catarrh of the anterior urethra is best treated by astringents, and there is probably none better than the generally used zinc sulphate. Pedersen uses this salt in solution "up to two grains to the ounce" (.4%), and advises injection twice daily, rarely three times daily, and then he gradually reduces the frequency. While zinc sulphate is often combined with several other ingredients for injection, such as fluid hydrastis, boric acid, etc., it probably acts as well in simple solution, as follows:

| R.                    | gm. or c.c. |          |
|-----------------------|-------------|----------|
| Zinci sulphatis ..... | 50          | or gr. x |
| Aquæ .....            | 100         | fl.ʒiv   |

M. et sig.: Use externally as directed.

This subacute stage of gonorrhea should cease in about two weeks, and if it persists longer it seems probable that there is some complication of a previous inflammation or a localization that should be definitely treated. If at any time during this subacute stage the secretion shows gonococci, Pedersen again uses the

silver albuminoid injection. During this stage the same restricted diet should be continued, but more exercise may be allowed.

If posterior or anterior urethritis persists with gonococci absent after the period of subacute inflammation has passed, Pedersen advises the use of nitrate of silver solutions. The whole length of the anterior urethra may be treated through an endoscope by means of a cotton swab medicated with 0.5 or 1 per cent. nitrate of silver solution; or there may be instilled by means of a deep urethral syringe a syringeful of a "1 to 5,000 to 1 to 250" solution of nitrate of silver, or a few drops of a 0.25 to 0.5 per cent. solution. Such treatment should not be repeated oftener than once in five days, and Pedersen says once in seven days may be a safer average. The passing of all instruments through the urethra, even in this late stage of gonorrhea, should be done with the greatest of care, and thin, bland oils are the best lubricants.

If the morning drop persists Pedersen believes that follicular urethritis is probably present, and thinks that irrigations are then advisable, as if solutions pass from the anterior urethra back into the bladder they cleanse the mouths of the follicles which are directed forward, and the retained secretions are thus removed. He would use for this purpose a solution of 1 to 30,000 of bichlorid of mercury or a saturated solution of boric acid, or a 1 to 2,000 potassium permanganate solution. The solution selected would be given by the ordinary irrigation apparatus, viz., a short glass urethral tube and the pressure necessary to cause the solutions to flow gently into the bladder.

If there is great disturbance from the posterior urethritis, Pedersen would put the patient to bed, and believes that the excuse may be present, even in the acute stage of gonorrheal urethritis, for first washing the anterior urethra with boric acid solution and then anesthetizing the mucous membrane with a 2 per cent. solution of eucain and passing a soft rubber catheter, 14 to 16 French, into the deep urethra, and then instilling into the deep urethra two or three fluidrams (from 10 to 15 c.c.) of a silver albuminoid solution, or a solution of nitrate of silver in strength of 1 to 5,000 to 1

to 1,000. He finds one such instillation may greatly relieve the patient of his distressing symptoms. This treatment may be repeated in a day or two, if it prove to be necessary.

It should not be forgotten that these apparently severe symptoms of a posterior urethritis may really be a prostatitis, or even the beginning of a prostatic abscess.

A posterior urethritis pure and simple in the acute stage of gonorrheal arthritis will rarely need irrigation treatment. As a general rule, it will be found that hot baths, absolute rest, a milk diet and the administration of alkalies will within twenty-four hours stop the intensity of the symptoms.

Hühner (*New York Medical Journal*, Jan. 23, 30 and Feb. 6, 1909) sums up his treatment of acute gonorrhea in the male as follows: If the patient is seen within thirty-six hours of the beginning of the discharge he tries to abort the disease by the administration of three injections of a 10 per cent. solution of protargol, at intervals of twelve hours, the first two injections to be held fifteen minutes and the last one five. During this period he would administer an alkaline mixture so long as there was pain on urination, and this pain is always more severe in a first gonorrhea than in subsequent attacks. He suggests the use of Professor Taylor's alkaline mixture as follows:

| R.  | gm. or cc. |             |
|---|------------|-------------|
| Potassii bicarbonatis .....   | 30         | ℥i          |
| Tincturæ hyoseyami .....  | 15         | or fl̄ss    |
| Aquæ, ad .....  | 250        | ad, fl̄viii |
| M. et Sig.: A tablespoonful, in half a glass of water, every three or four hours. |            |             |

If there is any local swelling he uses both hot and cold applications. He does not say which he prefers. The hot sitz bath seems to be the best treatment.

After using the above injection as directed, Hühner then advises a 0.5 per cent. solution of zinc sulphate as an injection, as:

| R.                                       | gm. or c.c. |          |
|--|-------------|----------|
| Zinci sulphatis .....                    | 50          | or gr. x |
| Aquæ .....                               | 100         | fl̄i     |
| M. et Sig.: Use externally, as directed. |             |          |

If the patient comes too late for the disease to be aborted, or if the abortive treatment is unsuccessful, he would begin deep urethral irrigations with potassium permanganate, 1 to 5,000, every day for the first two or three days, the solution being passed only with sufficient pressure to reach the deep constrictor muscle. After these two or three days he then would use sufficient pressure to pass the fluid into the bladder. Always before allowing the fluid to pass into the bladder he would wash out the anterior urethra with gentle pressure, to prevent the possibility of forcing any anterior urethral discharge into the bladder.

He defends the irrigation method on the theory that the ordinary urination and ordinary injection does not bulge out the urethra sufficiently to clean out the pus and gonococci contained in the folds of the mucous membrane, and this he believes irrigation does without injuring the mucous membrane.

On the third or fourth day he begins the vesical irrigations with the irrigator at a height of four and one-half feet above the bladder, and gradually increases the strength of the solution to 1 to 3,000. The irrigations are done daily until the discharge has entirely ceased, then every other day, and later the interval is further increased.

If there is a tendency to continuation of the morning drop, or if there is a large amount of discharge, after two weeks' treatment, he changes to silver nitrate injections and starts with 1 to 20,000 for the first day and increases the strength of the solution day by day until by the sixteenth day he has reached 1 part in 8,000. On the seventeenth day he again begins the use of potassium permanganate 1 part to 10,000, and then, daily, 1 part to 3,000. If at any time the solution appears too strong, as shown by too much reaction, he keeps the strength the same until the patient and the tissues are accustomed to it. "It is not wise to stop the irrigation treatment as soon as the discharge ceases, or even to stop increasing the strength of the solution."

Sometimes Hühner uses protargol solutions for intravesical irrigation, and with satisfactory results. He begins with 1 part in 16,000 and gradually increases the

strength to 1 per cent., but he believes potassium permanganate to be the best irrigation solution.

If the patient can not come to the office to receive the irrigation treatment, he advises the use of protargol solution with the ordinary urethral syringe, but insists that the solution should be kept in the urethra from ten to fifteen minutes, actual time, and would have the injections used every four hours by day, and if convenient, once during the night. Such treatment will often cause a disappearance of the gonococci within a few days. The protargol solution may be increased to 1.5 per cent. and then to 2 per cent., depending on the pain that it causes. At the end of ten days he would have the protargol solution used three times a day, and a 1 per cent. solution of zinc sulphate used once a day.

A patient is never considered cured of gonorrhea until there is absolutely no discharge, after holding the urine for twelve hours, and this on several examinations. Hühner believes that any continuation of discharge whatsoever shows that the disease is not eradicated. Holding the urine for twelve hours seems a very long time, but Hühner states that it can be done without difficulty.

For its analgesic and soothing effect on the urethra Hühner at times uses adrenalin chlorid solution, 1 to 1,000, in place of nitrate of silver, especially in deep urethral congestion. He also advises its use in endoscopic work, especially if there is any oozing of blood, and he would even treat localized granulations and ulcerations in the urethra with the solution. He advises pouring into the endoscope from fifteen to thirty drops of a solution of the above strength, and states that he has used as much as a fluidram without noticing any bad or poisonous effects. The use of such amounts of the active principle of suprarenal on absorbent surfaces like mucous membranes is certainly dangerous, as death has been reported to have followed the injection of 10 minims into the urethra. Consequently, it would seem inadvisable to use more than a few drops of adrenalin chlorid, or other solution of suprarenal, in the urethra at one time.



Hühner treats chordee with a prescription which he attributes to Taylor. It is as follows:

| R.                                 | gm. or c.c. |          |
|------------------------------------|-------------|----------|
| Extracti belladonnæ foliorum ..... | 20          | gr. iii  |
| Extracti opii .....                | 60          | or gr. x |
| Olei theobromatis .....            | 15          | ʒss      |

M. et fac suppositoria, 10.

Sig.: Use one at night, as directed.

### SUPPURATIVE CYSTITIS

Dr. Victor C. Pedersen, of New York, in the *New York State Journal of Medicine*, July, 1908, describes the treatment of acute, subacute, and chronic suppurative cystitis.

The acute form occurs without retention of urine and with retention of urine. Cystitis in women is easier to handle than in men on account of vaginal hot irrigations being easier of application and more effectual than rectal irrigation, and also on account of the urethra in women making it easier to use a retention catheter, if such is needed.

The constitutional procedures in the treatment of acute cystitis are "rest in bed, a fluid and non-irritating diet, preferably milk or something similar, and free evacuation of the bowels with calomel and salines." Alcohol, tobacco, condiments, and even tea and coffee should be prohibited. The next objects in the treatment are "to dilute, neutralize and antisepticize the urine, to quiet vesical irritation and pain, and to decongest the entire pelvic region."

Dilution of the urine is accomplished by drinking plenty of water, hot or cold, up to the amount of two or even three quarts a day, viz., a glassful every two or three hours. Most of this water should be drunk between rising in the morning and 6 o'clock at night, and much less taken in the evening hours, so that the patient may not be caused to rise as frequently at night to urinate. Milk may be mixed with equal parts of vichy water; buttermilk, koumyss or matzoon may be substituted for milk if desired, or used interchangeably.

## NEUTRALIZING THE URINE

It should be the object to neutralize the urine, namely, to render an acid urine neutral, or if a urine is alkaline to render it neutral, as urine either too acid or too alkaline, Pedersen states, causes irritation. Consequently he would use in ordinary acute cystitis with acid urine the simpler alkalies, such as the bicarbonate of soda in daily doses of from 4. to 8. grams (1 to 2 drams), or the citrate of potash in daily doses of from 2. to 4. grams (30 to 60 grains), as:

| R.                       | gm. |    |          |
|--------------------------|-----|----|----------|
| Magnesii oxidi .....     | 5   | or | gr. lxxv |
| Sodii bicarbonatis ..... | 20  |    | 3v       |

M. et fac chartulas, 20.

Sig.: A powder, with water or vichy, every three hours during the daytime.

Or:

| R.                      | gm. or c.c. |    |       |
|-------------------------|-------------|----|-------|
| Potassii citratis ..... | 20          | or | 5vi   |
| Aque .....              | 100         |    | 113iv |

M. et sig.: A teaspoonful, in water, every four hours.

If the urine is alkaline vegetable acids may be given or hexamethylenamin. As an antiseptic hexamethylenamin or salol may be used.

A trace of albumin in the urine, or signs of kidney irritability, or backache that can be referred to a congestion of the kidneys, should prevent the administration of either salol or urotropin.

Generally in acute cystitis rest, a bland diet, the alkalies, and the local measures instituted will relieve vesical or urethral pain. However, it is often necessary to use a narcotic, as opium in some form, scopolamin (hyoscin), or belladonna. If the pain is severe, opium or morphin suppositories may be used. A combination of belladonna with morphin is often good treatment, as:

| R.                                 | gm. |    |         |
|------------------------------------|-----|----|---------|
| Morphinæ sulphatis .....           | 10  |    | gr. iss |
| Extracti belladonnæ foliorum ..... | 20  | or | gr. iii |
| Olei theobromatis .....            | 20  |    | 3v      |

M. et fac suppositoria, 10.

Sig.: A suppository every six or eight hours, if needed.

Hyoscyamus in the form of the tincture is often used as a vesical sedative. It is a question whether it has any

action differing from that of belladonna, or of a small dose of atropin. It may be used as follows:

R. c.c.  
Tincturæ hyoscyami ..... 25| or fl. ʒi  
Sig.: 20 drops, in water, every four hours.

The action of morphin is, of course, sedative to cystitis as it is to any inflammation. Atropin or any drug containing it, as hyoscyamus or belladonna, is sedative to the terminal endings of the nerves and seems to be especially sedative to the nerves at the neck of the bladder, and will relieve the constant desire to urinate that is so urgent in acute cystitis.

Pedersen also recommends the use of aconite in the form of the fluid extract in doses of 2 drops (1 minim) every two or three hours until the lips, throat and finger tips begin to tingle. After this he would give it at four-hour intervals. He finds the aconite "to allay the congestion powerfully and surely, not only in the bladder itself, but in the pelvis." Such sturdy use of aconite would seem not often necessary in cystitis, and even the use of any of the above nerve sedatives can often be avoided by the proper use of hydrotherapeutic measures, and saline purges should not be neglected. The hydrotherapeutic measures consist of the hot sitz bath, perhaps two or three times a day, and hot vaginal or rectal douches.

If in spite of the above treatment the cystitis persists or becomes subacute, bladder washings or even permanent drainage with the catheter remaining in position, especially in women, may be necessary.

When the vesical tenesmus is very severe and it is perhaps inadvisable to use morphin, Pedersen uses cocain, instilling from 10 to 20 drops of a 2 or 4 per cent. solution into the prostatic urethra or into the neck of the bladder. The possibility of unpleasant symptoms occurring from the absorption of cocain thus used should preclude its frequent use.

In subacute cystitis Pedersen instills into the region of the neck of the bladder 0.5 c.c. ( $7\frac{1}{2}$  minims) of a 10 to 20 per cent. solution of argyrol, or a 5 per cent. solution of nitrate of silver, and he says that the relief from such instillations is sometimes "almost magical." He does not state how often such instillations should be

used, but the usual frequency is from three to five days, depending on the stimulation such mucous membrane requires.

#### AS IMPROVEMENT OCCURS

As acute cystitis improves, of course, the diet is enlarged, more food may be taken, and good sense exercised in the amount of walking that the patient should do. The continuance of urinary antiseptics will depend on the cause of the cystitis or the infection, and it is always advisable to examine the purulent matter in cystitis as well as in urethritis to determine what germs are present. It may be advisable to diminish or stop the administration of any alkalizers of the urine, if such have been given, lest a urine that is continuously neutral or alkaline may not inhibit the growth of germs as does normal acid urine. If a genitourinary stimulant seems needed to complete the cure of the inflammation, santal oil, oleoresin of copaiba, and oil of gaultheria are suggested by Pedersen. The oil of gaultheria affords another method of giving salicylic acid, and is, of course, a urinary antiseptic, and may be the best treatment. The oil of santal and the oleoresin of copaiba act similarly, except that the copaiba is more likely to cause gastrointestinal indigestion and has no advantage over santal oil. The santal oil may be administered in elastic capsules each containing 5 minims, and Pedersen advises the use of three of these a day, one after each meal.

The urine should be carefully watched during acute and subacute cystitis. If there are casts in the urine Pedersen advises against the administration of the antiseptics. Certainly it should prohibit the use of salol. Whether the same is true of hexamethylenamin is still open to discussion.

Pedersen quotes Dr. William H. Thompson as advising the use of benzoate of soda in 0.30 gram (5 grain) doses when it is inadvisable to use urotropin.

#### IRRIGATION

If the cystitis has passed the acute stage and tends to be protracted, irrigations are advisable and necessary, but, as Pedersen says, "it must not be forgotten that no means of irrigation that can be employed will penetrate the full depth within the mucous membrane reached by

the inflammatory processes and by the infection." Whatever solution is used for irrigation, the following rules should be observed, viz.: never distend the bladder too forcibly, and always wash until the return fluid is clean. To further the first rule, Pedersen recommends the use of the hand syringe, of which the "Janet-Franck glass barrel syringe" he thinks is the best type. To carry out the second rule he insists on the use of test glasses which should be ready at hand to show when the washing solution is returned clear. It does not seem as though a graduated fountain syringe, elevated but slightly above the patient and the elevation regulated by the pressure desired, would do any harm. At first salt solution should be used, as a teaspoonful of salt to a pint of water, or a bicarbonate of soda solution, a tablespoonful to a pint of water, or a 1 per cent. boric acid solution. Later Pedersen would use for irrigation "weak solutions of potassium permanganate, as 1 to 10,000, increasing slowly to 1 to 4,000." Silver nitrate solutions may be used of 1 to 20,000 up to 1 to 5,000. "A soft rubber or flexible woven catheter" is the best to use, and the temperature should begin with the body heat and increase up to 110 F. After the washing is completed it is advisable to leave an ounce of fluid in the bladder, which will tend to prevent the vesical tenesmus which often follows. If there is much pus in the bladder the irrigations should be done "twice daily, then once a day, and then every other day, and later every third day."

If there is retention of urine at any time during the cystitis the question of permanent drainage, either by a catheter or operation will have to be considered. permanent drainage with a retained catheter being perhaps better than frequent catheterization.

The treatment of chronic suppurative cystitis can only be carried out successfully by determining the cause of the condition. Whatever that cause may be, it should be removed if possible; then the best possible simple foods, gentle exercise, massage if deemed advisable, fresh air and free, daily movements of the bowels should be instituted, as any upset condition of the body will perpetuate chronic cystitis. Uric acid irritations or phosphatic irritations should be prevented if possible. Hot baths are advisable and over-tire should be pre-



vented. Also there should be no opportunities for getting severely chilled, as chilling of the body will aggravate any cystitis.

If the urine is alkaline, as it generally is, the benzoate of soda or hexamethylenamin may be used, as above suggested. It may be advisable at times to use salol, or it may seem best to use a stimulant, as oil of santal. Irrigations of the bladder may be necessary, and the same care should be exercised as stated above in acute and subacute cystitis. The irrigations may be given daily, or less frequently, as indicated by the amount of pus or decomposition present. If the cause of the condition is one that can be removed surgically, operation should not be long postponed, but the success of an operation is greater if the cystitis has been relieved to the greatest possible extent.

# DISEASES OF THE KIDNEYS

---

## CHRONIC NEPHRITIS

Chronic interstitial nephritis, Bright's disease, or better named under the clumsy but more descriptive title of cardiovascular-renal disease, is markedly on the increase in this country; consequently, it is necessary for the medical profession to take means of preventing its occurrence. It is unimportant for the discussion of its prevention which part of the anatomy of the individual patient has farthest advanced in the pathologic process. One patient may have arteriosclerosis greatest in evidence, another cardiac weakening, another renal disturbances, but the disease in any case is the same. Increased blood tension seems to be the premonitory condition and the forerunner of all subsequent disturbances in this cardiovascular-renal disease.

## ARTERIAL TENSION

A question that has been considerably discussed is: What is the etiology of this increased blood tension? The condition has been variously attributed to tension caused by increased nervous activity; to hypertrophy of the left ventricle, which, however, is probably generally compensatory to overcome the increased arterial pressure; to the circulation in the blood of toxins absorbed from the intestines, which irritate the vessel walls and the central nervous system; to toxins retained in the blood from insufficient excretion by the kidneys; and to a hypersecretion of the vasoconstrictor element of the suprarenals, or to a relatively increased secretion from these glands, at a period of life (after fifty) when the thyroid furnishes a diminished secretion and therefore less vasodilator stuff. It is probable that all or several of these elements, which cause arterial irritation, are at work at once, and there probably is no one cause for a slowly developing endarteritis, increased blood pressure, and a future arteriosclerosis. The parts that chronic lead poisoning, syphilis and its treatment with mercury,

serious acute infections, prolonged serious illness, alcohol and the ever frequent over-use of tobacco have played in causing the signs of beginning sclerosis must all be taken into consideration, when the attempt is made to prevent the development of, or to stay, the pathologic process.

It is manifestly impossible to prevent the serious conditions that have gone before, viz., acute illness, syphilis, mercury and lead. It is possible to prevent the continuation of causes that are continuously acting in the individual patient, such as alcohol, tobacco, over-eating, intestinal indigestion, and the nervous tension caused by an excessive amount of mental labor, or by the strenuous life that the patient may be leading.

#### PREMONITORY SYMPTOMS

In this insidious, creeping and almost sneaking disease it is obviously important to recognize early its premonitory symptoms and signs. Not infrequently it is the oculist who is consulted for disturbances of vision, who first notes arterial changes in the retina. The symptoms which the patient has and which he may take note of, or, on the other hand, take no notice of, are: a slight tendency, or an increased tendency, to headache; slight headaches on first awakening in the morning; some early muscle debility in the morning, which soon passes away, as does the headache; at times, some pain in the occipital region; occasionally intermittency of the heart, sometimes an increased force of the beat, especially on first lying down; sometimes slight attacks of palpitation and dyspnea after exertion that should not cause cardiac disturbance; at times, on exertion, a peculiar paleness about the mouth; at other times flushing of the face; slight puffiness of the ankles at night, not real edema; a sensitiveness of the skin to slight irritation, so that rubbing or scratching causes an intense local hyperemia that may persist for some minutes; at times occasional digestive disturbances, nausea and vomiting attacks; frequently a coated tongue and a bad taste in the mouth in the morning; possibly a little diarrhea without adequate food, cold, or inflammatory excuse; days of increased frequency of urination; and the tendency to be awakened once, perhaps twice, at night to urinate. These

symptoms may bring the patient to the physician, but often do not. In some instances it is the increased frequency of urination at night, or an irritability of the bladder, or a general weakening of the patient from circulatory debility, or actual cardiac distress with possibly slight anginal attacks, that cause the patient to consult his physician.

Besides the above symptoms, the physician finds either increased pulse tension, or, in many instances, a pulse tension that was increased has become lowered from slight cardiac weakness, before the patient has consulted him. In all cases, the blood pressure should be taken and noted, and circulatory treatment directed according to the reading. The physician will often find an intermittency, sometimes an irregularity, of the heart, often slight enlargement, and at times a soft systolic blow at the apex, showing weakness and a slight dilatation of the left ventricle. If there is a systolic blow at the aorta, there may be a slight roughening of this valve, or the sound may be of hemic origin, even if the patient is not anemic; in other words, either one of these cardiac murmurs, the aortic or the mitral, may disappear under proper treatment.

The physician may note an abnormal tendency of the veins of pendent portions of the body (especially of the hands when hanging down) to become dilated, showing some circulatory insufficiency. This may be due to slight arteriosclerosis, or it may be due to cardiac weakness.

The tongue may show varying signs of digestive disturbances or an irregular, patchy, coated condition which is typical of renal insufficiency.

The urine may be of low specific gravity, may contain a trace of albumin, and may show hyaline and granular casts, but all these important urinary findings may be absent. It is essential to examine several specimens of the twenty-four hours' urine to determine the ability of the kidneys to excrete not only nitrogen, but salts. The results of these examinations will decide the modifications of the diet that are necessary.

The results of the examination of the circulation will determine the amount of rest that is necessary, or the amount of exercise that should be allowed.

## PROPHYLACTIC MEASURES

Drs. N. E. Ditman and W. H. Welker, New York, in a series of articles in recent numbers of the *New York Medical Journal*, ending June 5, 1909, have scientifically presented the symptoms, etiology and treatment of nephritis. They make the statement that in a large proportion of instances this disease is preventable, and certainly ordinarily in its incipency it may be stopped or stayed. If the patient comes to the physician when the above symptoms only are present, prophylactic measures to prevent the further development and progress of the disease are presented as follows by Ditman and Welker:

*Alcohol.*—The pernicious effects of alcohol in causing nephritis is attributed generally to its interference with oxidation, and imperfect oxidation is considered by these experimenters to be a distinct cause of nephritis. Consequently, as has long been theoretically known, patients with early signs of cardiovascular-renal disease must not take alcohol in any form.

*Cold.*—The climate of the temperate zone is more conducive to the development of nephritis than are zones where it is colder and zones where it is warmer. The rapid variations in temperature experienced in temperate climates cause marked changes in the tone of peripheral vessels. Sudden cold raises the blood pressure, inhibits excretion by the skin, and puts more work on the kidneys. For this reason the patient with a beginning chronic nephritis should live during the colder and variable seasons of the year in a warmer climate, if he has the money ability. If he has not the financial means to change his abode, he should be so clothed as to prevent the surface of his body from becoming chilled. Ditman and Welker believe these sudden changes of temperature from warm to cold interfere with oxidation, and for this reason cause kidney irritation.

*Exercise and Baths.*—The authors believe that exercise for those who devote most of their time to business and its worries, or household duties and frets, and who eat hurriedly, is essential for proper oxidation and, therefore, should enter into the prophylactic treatment of nephritis. Outdoor exercise, plenty of sunlight and sun baths, especially when applied to the whole body, are of great benefit to the patient who is on the verge of



arteriosclerosis, chronic nephritis, and their associated conditions. For some patients frequent warm baths and Turkish baths are indicated. This is especially true for the patient who is over-weight, and for the patient whose skin does not normally perspire and therefore does not normally excrete. If the heart is impaired, Turkish baths should not be taken.

*Food.*—Over-eating of protein nutriment is certainly a promoter of the causes of arteriosclerosis and chronic nephritis. This is especially true if the intestinal digestion is imperfect. Meat, especially, is the protein that is most likely to produce toxins, if maldigested, and if putrefaction occurs in the intestines. Therefore, a patient, who is on the verge of or has a beginning, chronic nephritis, should eat meat but once a day, and that in not large amount. It may be well to take meat out of the diet for a short period, at least. Raw meats, raw oysters, and especially the proteins that contain large amounts of nuclein, as liver and pancreas, should be eliminated from the diet. Meat broths and meat soups that contain a large amount of extractives should be avoided.

*Intestinal Putrefaction.*—While it is probably not true that if the colon of the human being after forty could be removed he would live to be a hundred, more or less, it certainly is true that intestinal putrefaction, whether mostly in the colon or more or less in the small intestine, is conducive to the absorption of toxins that are irritant not only to the arterial walls, but specifically to the kidneys, and such irritants have been found to promote albuminuria and chronic interstitial nephritis. Any food, diet, regulation of habits, physical or medicinal treatment that will prevent or inhibit intestinal putrefaction will promote the prophylaxis of chronic nephritis.

The primary treatment of this condition is catharsis, followed by such laxative treatment as will keep the intestinal contents normally moving. Radical changes in diet will change the pabulum which aids the growth of the obnoxious bacteria.

Artificially soured milk seems to be a successful treatment of many cases of intestinal putrefaction. Yeast is another valuable treatment of this condition. The so-

called intestinal antiseptics are of some advantage and sometimes are curative.

The prevention of the condition, or the prevention of its recurrence after it has been stopped, should begin with proper filling, or extracting, decayed teeth, and frequent and repeated cleansing of the teeth, mouth and throat with such mildly antiseptic or alkaline gargles as are deemed advisable, and the limitation of the food to such articles as are easily and well digested by the particular patient. Foods that tend to carry bacteria and that promote putrefaction should be prohibited, and Herter especially prohibits cheese and the skins of fruit.

Dilute hydrochloric acid is a valuable treatment, if indicated.

Ditman and Welker believe that quantitative determination of the creatinin eliminated will denote the condition of the digestion and the amount of maldigestion and suboxidation, and therefore the likelihood of the development of nephritis.

#### TREATMENT OF NEPHRITIS WHEN ACTUALLY PRESENT

The above suggestions for prophylactic measures should all be enforced, and Ditman and Welker emphasize the fact that all the methods of treatment, physical and medicinal, found of advantage in chronic nephritis and uremic conditions, are those that tend to promote oxidation in the body.

They have investigated the indican and creatinin excretion in reference to the presence of such symptoms as high tension, headache, lassitude, nausea and vomiting, edema and dyspnea, and find that the arterial tension seems to be increased when there are large amounts of indican in the urine and when the excretion of creatinin is reduced. Also the greater the amount of indican the more the headache, and the less creatinin excreted the more the lassitude, nausea and vomiting. Dyspnea and edema seem to have no relation to the indican or creatinin.

Patients with chronic interstitial nephritis do not excrete sodium chlorid well, and this retention seems to cause edema; hence if there is edema in chronic nephritis the sodium chlorid intake should be reduced, or it

should be entirely withheld for a time. Albuminuria is also decreased, when present, by a saltless diet.

The diet in chronic nephritis should be carefully considered. An absolute milk diet is inadvisable. A large amount of water is inadvisable. The amount of meat allowed depends on the ability of the kidneys to excrete nitrogen. There is no difference in the extractives or in the ability of the kidneys to excrete the extractives of ingested red or white meat. The main object in the diet of the nephritic is that he should have a little of all the elements that are necessary for nutrition, nothing that causes indigestion or serious constipation, nothing that has been found by chemical analysis of the urine to be difficult of excretion by the kidneys, and enough food to keep the weight as near normal as possible. He may therefore have some milk, if it agrees; water sufficient to keep the excretions normal, but not sufficient to cause edema, nor in large amounts, if the arterial tension is high, or if he has arteriosclerosis; meat in small amount once a day; eggs; oatmeal, or other cereal; bread, potatoes and other fresh vegetables (no canned food); non-irritating, preferably cooked, fruits; all depending entirely on his ability to digest properly and to excrete the end-products of each particular food. As uric acid is not ordinarily well excreted by kidneys which are in the condition of interstitial nephritis, the purin bases and all such foods as contain large amounts of nuclein should be prohibited, typically liver. Also, all spices and often tea and coffee should be withheld from the diet.

The care of the skin in the nephritic is of special importance. Proper exercise should be taken to cause normal perspiration; warm baths and massage promote normal excretion by the skin. If the skin is a normally excreting organ in the patient who has chronic nephritis he may do well for years. If the skin is dry, diseased and does not properly excrete, he will soon have uremic symptoms.

No drug of any kind that causes irritation of the kidneys during its excretion should be administered to a patient with chronic nephritis. Such drugs are all of the coal-tar products, some of the vasoconstrictors, the

stimulant and irritating diuretics, the aromatic oils, and many of the synthetic compounds.

As most nephritic patients are, or soon become anemic, iron in some simple form should be administered, and there is no better iron for this purpose than the tincture of the chlorid, in from 1 to 5 drop doses, in a little fresh lemonade, administered two or three times a day.

It has been shown that the alkalinity of the blood is diminished in patients who are suffering from chronic nephritis. Consequently, the alkalies seem indicated and have long been found of some advantage to these patients. Alkalies are also promoters of oxidation. It should not be forgotten, however, that if they are long administered they may promote tissue waste and therefore loss of weight. While also they are diuretics, diuretics are not always indicated in nephritis, even when the amount of urine passed is small, as injured kidneys do not need stimulation of any kind, but rather derivation such as would be produced by cathartics and by hot baths. Also, urine that is abnormal in its constituency tends easily to have its normal acidity reduced and become neutral or even alkaline, in which conditions bacteria grow and infectious disturbances start, and slight inflammation from infection can occur in any part of the urinary passages. In this condition alkalies would promote and not diminish the growth of bacteria, hence would be contraindicated.

Colon irrigations, to wash out fecal débris and cleanse the large intestine of bacteria, are especially indicated when there are any symptoms showing that uremia may be imminent. When the symptoms show that the patient is about to have an uremic attack, purgatives, hot baths, colon washings, almost total abstinence from food for twenty-four hours, the administration of water, or a small amount of milk and water only, and absolute rest in bed is the best possible preventive treatment.

# DISEASES OF THE EYE

---

## OPHTHALMIA NEONATORUM

While the treatment of this serious inflammation is generally rightly referred to the oculist, it may occur in little patients whom it is impossible to bring under the specialist's care. Also, the prevention of this inflammation of the eye is of national importance, and should be understood and carried out by every practitioner who takes charge of obstetrical cases.

Dr. Julien A. Gehrung, New York (*New York State Journal of Medicine*, May, 1909), offers good advice for the prevention and treatment of this serious inflammation.

### PROPHYLAXIS

As soon as the child is born and after thoroughly cleansing the eyes, he advises the instillation of a drop of a 1 per cent. nitrate of silver solution. While Credé advised the use of a 2 per cent. solution, Gehrung thinks the 1 per cent. is of sufficient strength. After the child has been washed and dressed and the nurse's hands have been cleansed, he advises the instillation of another drop of the 1 per cent. solution into each eye, and this may be followed by a little physiologic saline solution or a drop of adrenalin chlorid solution (1 to 5,000). This "stops the pain and neutralizes the further action of the silver."

Gehrung believes that this prophylactic treatment is efficient and as satisfactory as can be obtained from any silver preparation.

### ACTIVE TREATMENT

If in spite of such prophylactic treatment (and he emphasizes the necessity of cleanliness as being next to godliness, both in the care of the child and in the nurse's care of her own hands) the conjunctivæ become inflamed, he advises the use of cold boric acid solution (if the cornea is not involved) and careful cleansing of the pockets of the conjunctivæ. The lid of the eye



is gently raised, all pressure being avoided, and the tip of a soft rubber bulb syringe is inserted under the upper lid. Slowly and gently the eye is irrigated with the cold boric acid solution to wash out all purulent matter. "This should be done every fifteen minutes, or oftener if the discharge is profuse."

He next advises the instillation of a 4 per cent. solution of cocain and adrenalin chlorid (1 to 5,000) for its anesthetic effect and to cause contraction of the blood vessels.

The cornea should be carefully watched, and to inspect it properly, if necessary, a lid elevator should be used. If the cornea is involved, hot applications and atropin drops are indicated.

If but one eye is involved, the greatest care should be exercised to prevent infection of the other eye.

Once a day during the inflammation Gehrung applies a 1 per cent. nitrate of silver solution as follows: "Raise the lid slightly, and with a cotton swab saturated with the silver solution gently brush (raising the upper eyelid on the swab) the whole conjunctiva, both upper and lower, being careful to treat the cul-de-sacs thoroughly. Such treatment breaks up all adhesions, opens pockets of pus, and enables the medicament to reach all parts." If bleeding is caused, it does good rather than harm.

The point of the swab should be thoroughly protected by folding cotton over it so that it can not injure the membrane. To apply the above treatment it is not necessary to evert the swollen, painful lids; simple elevation of the upper lid by the retractor is sufficient.

If the disease is severe, Gehrung uses instillations, every one or two hours, of a strong, even up to 50 per cent., argyrol solution, but does not believe this alone is satisfactory, and reinforces it by one daily application of a 1 per cent. solution of nitrate of silver. He thinks the nitrate of silver kills the germs that cause the inflammation.

He believes that ice compresses are of value, applied from ten to twenty minutes every two hours, or, if possible, more frequently, "according to the vitality of the child," but if the cornea is involved, as above stated, hot applications must be used.

Proper nutrition, preferably mother's milk, and proper hygiene are important factors in aiding quick recovery from this serious inflammation.

---

### SWEATING IN SERIOUS AFFECTIONS OF THE EYE

Dr. Howard F. Hansell, Philadelphia, in the *Pennsylvania Medical Journal*, August, 1908, describes his method of causing diaphoresis in serious eye affections. It seems true that sweating is not resorted to with sufficient frequency in edemas, congestions, and inflammations of the eye. Such treatment is deemed useful and advisable by many oculists, and Dr. Hansell well points out its advantages.

The methods most used to cause diaphoresis are by the administration of jaborandi (pilocarpin) and by dry heat. Owing to the fact that jaborandi occasionally produces considerable weakness, Hansell has abandoned its use, and now causes sweating by first covering the mattress of the bed on which the patient is to lie with a rubber sheet. The patient is then enveloped in three thick blankets. "On each side, extending from the feet to the shoulders, and as close to the skin as the heat will permit are placed receptacles filled with hot water." The patient is then given a cup of hot fluid, preferably tea.

The sweating should begin very quickly, and should continue, provided the hot water applications are kept up. If a glass of ice water is given a half hour after the sweating has commenced, the sweat glands are stimulated to increase their work. All during the sweating process the head should be either wrapped with a wet towel or an ice cap should be applied. Hansell makes the outside limit of this sweating process an hour and a half. Of course the duration of the sweating could be limited, if at any time there was faintness or prostration. After the sweating the body should be dried and rubbed with alcohol and the patient removed to a dry, warmed bed and allowed to remain there for several hours.

It is preferable that this sweating process should be accomplished in the afternoon, the patient remaining in bed until the following morning. The number and

frequency of the sweatings depend on the severity and chronicity of the disease and on the physical condition of the patient. The reaction of the patient to the treatment and the effect on the eye inflammation, for which it is instituted, will determine the frequency of the sweatings and the length of time each should be allowed to continue.

At the conclusion of the sweat bath the patient's temperature may have risen to 102 or 103° F., and the pulse is accelerated, but in healthy reaction the temperature should have returned to normal two or three hours later. If the reaction is such as to produce a subnormal temperature, the duration of the sweat should be shortened, and should perhaps be preceded by the hypodermatic administration of strychnin or other stimulant. If the temperature remains high longer than two or three hours the sweat baths should not be continued.

#### JABORANDI

Dr. George de Schweinitz, Philadelphia, in discussing this treatment, believes that in spite of the disadvantages of jaborandi, in some cases no other kind of sweat will do as much good to the local eye condition as will this drug.

The advantages of these sweatings seem to be due to the stimulation and increased activity of the lymphatic system, and this absorbent activity of the lymph, and possibly blood vessel systems, tends to clear up or relieve exudates and inflammations of the eye.

The special indications for the use of these sweatings are "inflammation of the sclero-cornea, of the uveal coat, acute and chronic, of the chorio-retina, and of the optic nerve." While this diaphoretic treatment is not always successful, Hansell has never known it to do harm. It is of greatest value in chronic inflammations associated with exudates into the different parts of the eye. Of course when atrophy or connective tissue change has taken place in any part of the eye, sweatings could do no good, but Hansell says that it can not always be decided positively from the ophthalmoscopic findings that an exudate has given place to connective tissue, and for this reason it is many times wise to try the efficiency of diaphoresis.

Of course such treatment does not preclude the co-incident administration of salicylates when rheumatism is the cause of the eye inflammation, or of mercury or iodids when syphilis is the cause of the trouble.

Hansell also believes, as do others whom he quotes, that diaphoresis, perhaps best with pilocarpin (*jaborandi*) should be tried in opacities of the vitreous, and in alcohol and tobacco amblyopia, of course after the withdrawal of these causative agents. Patients suffering with loss of sight due to alcohol or tobacco should also, of course, be given strychnin.

---

### BLEPHARITIS

Dr. Aaron Bray, Philadelphia, in the *Therapeutic Gazette*, August, 1908, discusses the treatment of this troublesome condition. While this inflammation may occur at all ages, it is most frequent under the age of 20. Unhygienic surroundings seem to predispose to it, and errors of refraction are, of course, the most frequent cause. Occupations which call for close eye work with insufficient light predispose to the condition, again a species of eyestrain. Consequently it is useless to inaugurate treatment of blepharitis until errors of refraction are corrected by glasses or the use of the eyes with improper light is prevented.

There are various grades of this inflammation, viz., "simple hyperemia, squamous blepharitis, pustular blepharitis, and eczematous blepharitis." The hyperemic variety will soon be cured by glasses, if they are needed, and the correction of habits that are debilitating, and the improvement of unhygienic surroundings. The squamous variety often leads to recurrence of sties and is likely to be associated with some "conjunctivitis, constitutional dyscrasia, nasopharyngeal disease, and perhaps obstruction of the tear duct," all of which should be corrected while the disease itself is locally treated. The ulcerative or pustular form of the inflammation is tedious of recovery and if not treated early tends to cause "ectropion or eversion of the puncta." The eczematous variety is likely to be associated with eczema on other parts of the body, especially the face and scalp.

Unless the patient is over 40 it is unsatisfactory to attempt to correct errors of refraction without a cyclo-



plegic, as atropin or homatropin. Most patients also need a sedative lotion for the eye, as there is so likely to be a coincident, though mild, conjunctivitis. For such inflammation Brav recommends the following eye wash:

| R.                            | gm. or c.c. |              |
|-------------------------------|-------------|--------------|
| Acidi borici .....            | 2           | 3ss          |
| Zinci phenolsulphonatis ..... | 15          | or gr. ii    |
| Aquæ camphoræ .....           | 15          | fl. 3ss      |
| Aquæ destillatæ, ad .....     | 100         | ad, fl. 3iii |

M. et sig.: Bathe the eyes with this solution, three times daily.

Also efficient is the following used as eye drops:

|                           |    |            |
|---------------------------|----|------------|
| Acidi borici .....        | 25 | gr. v      |
| Aquæ camphoræ .....       | 15 | ad, fl. 3i |
| Aquæ destillatæ, ad ..... | 25 | or fl. 3v  |

M. et sig.: Place two or three drops in each eye three or four times a day.

Brav believes that massage of the affected lids is a very important therapeutic measure and is best done with the aid of an ointment, and he prefers lanolin (adepts lanæ hydrosus). Gentle massage made by horizontal stroking movements on the closed lids with the index finger, carried from the inner to the outer angle of the palpebral fissure, and lasting from three to five minutes, relieves venous congestion and stimulates the activity of the lymphatics, and absorption of inflammatory products is increased. This ointment, or vaselin if preferred, will soften the scales and allow them to be removed, thus aiding in getting rid of the blepharitis. Such massage is best done at bedtime, when some of the ointment may be left on the lids. In the morning the ointment may be washed off, and with it will come many of the scales. The yellow oxid of mercury seems to be a most valuable medicament for healing the lesions of this inflammation. It may be ordered as follows:

| R.                           | gm. |       |
|------------------------------|-----|-------|
| Hydrargyri oxidi flavi ..... | 10  | gr. i |
| Olei olivæ, q. s. ....       |     | q. s. |
| Petrolati .....              | 10  | 3ii   |

M. et sig.: Apply at bedtime as directed.

This makes 1 per cent. of the yellow oxid of mercury. It should be remembered that the official yellow oxid of mercury ointment is 10 per cent.

Brav believes that in some cases salicylic acid ointment has a more favorable action, especially when there is much itching of the lids, as:



| R.                             | gm. |    |        |
|--------------------------------|-----|----|--------|
| Acidi salicylici .....         | 15  | or | gr. ii |
| Adipis lanæ hydrosi .....      | 10  |    | 3ii    |
| M. et sig.: Apply as directed. |     |    |        |

If the itching is very marked Brav uses a tannic acid ointment, as:

| R.                           | gm. |    |        |
|------------------------------|-----|----|--------|
| Acidi tannici .....          | 15  | or | gr. ii |
| Petrolati .....              | 10  |    | 3ii    |
| M. et sig.: Use as directed. |     |    |        |

Occasionally he uses cocain as follows:

| R.                           | gm. |    |        |
|------------------------------|-----|----|--------|
| Acidi tannici .....          | 15  |    | gr. ii |
| Cocainæ .....                | 10  | or | gr. i  |
| Petrolati .....              | 10  |    | 3ii    |
| M. et sig.: Use as directed. |     |    |        |

If the tannic acid preparations cause irritation they should be discontinued. If the itching persists, the dried secretion in the little glands should be carefully expressed from the ducts.

The general condition of the patient should always be investigated and, if necessary, corrected. Proper food should be given, the bowels should be regulated, and any tonic that is needed—especially iron—should be administered. Hot water applications to the eyelids may be necessary to get rid of the crusted secretions and to relieve congestion; also diseased cilia should be removed, especially in the pustular type of the inflammation.

Sometimes Brav finds it necessary to stimulate a sluggish process with a 1 per cent. solution of nitrate of silver.

Of course syphilitic or rheumatic patients should receive the treatment called for by the systemic condition.

### IRITIS

Dr. Aaron Brav, Philadelphia (*New York Medical Journal*, Feb. 22, 1908), carefully describes the treatment of this frequent inflammation of the eye. He says that it is a disease of long duration, requiring from six to twelve weeks to effect a cure, a short duration depending entirely on the prompt application of therapeutic measures. The disease is subject to "remissions, exacerbations and recurrences, and in no other ocular disease is the clinician confronted with so many problems on

the prompt solution of which depends the ultimate success of the treatment." The recognized causes of iritis are "syphilis, rheumatism, tuberculosis, scrofulosis, malaria, anemia and the infectious fevers."

Dr. C. Higgins, London, senior consulting ophthalmic surgeon, Guy's Hospital (*The Lancet*, April 25, 1908), states that iritis is frequently due to the poison of gonorrhea, although the original infection may have occurred many years before. He thinks this is very frequent in men; perhaps rare in women. The results of this gonorrheal iritis include all the serious consequences to the eye to which iritis is prone.

Brav considers the treatment of iritis under the following headings:

1. To give complete rest to the inflamed organ until all the inflammatory signs have subsided.

2. To relieve pain so as to enable the patient to sleep well and allow Nature's recuperative powers to exert their influence.

3. To prevent, so far as possible, any serious sequelæ, such as the formation of posterior synechiæ."

He says that as a routine practice, eye lotions are not needed, and that irritating eye washes are positively contraindicated. Both eyes should have absolute rest from use, even if but one is affected. Smoked glasses should be used, so that the patient may not be confined to a dark room, although during the acute stage the patient should be in bed and bright light prevented from entering the room. When the pain subsides the patient is better out of bed and in the open air. The diet should be mild and non-stimulating, as in any other acute inflammation, and at the beginning of treatment a good purgative, best perhaps calomel, should be given. Brav gives magnesium sulphate every morning, to be repeated in the evening, if necessary, as:

| R.                       | gm. or c.c. |          |
|--------------------------|-------------|----------|
| Magnesii sulphatis ..... | 50          | 3ii      |
| Syrupi limonis .....     | 50          | or fl3ii |
| Aquæ .....               | ad 150      | ad fl3vi |

M. et Sig.: A tablespoonful, in half a glass of water, before breakfast.

The most important drug in the treatment of iritis is atropin, which should be used in sufficient doses to produce its full physiologic effect on the pupil. When used

in the eye it rarely produces poisoning in the adult, but in children should be used with care. Brav uses a 1 per cent. solution, as:

| R.                       | c.c. |            |
|--------------------------|------|------------|
| Atropinæ sulphatis ..... | 10   | or gr. iss |
| Aquæ destillatæ .....    | 10   | fl3iiss    |

M. et Sig.: One drop in the affected eye every hour until the pupil is dilated; then one drop every eight hours.

[All strong preparations of atropin or similar drugs should be labeled "poison."]

In children a 0.5 per cent. or 0.25 per cent. solution should be used, as deemed advisable, but when atropin causes unpleasant symptoms Brav suggests the following:

| R.                        | c.c. |                      |
|---------------------------|------|----------------------|
| Duboisinæ sulphatis ..... | 035  | or gr. $\frac{1}{2}$ |
| Aquæ destillatæ .....     | 10   | fl3iiss              |

M. et Sig.: One drop instilled into the affected eye every eight hours. Or:

| R.                             | c.c. |                      |
|--------------------------------|------|----------------------|
| Scopolaminæ hydrobromidi ..... | 015  | or gr. $\frac{1}{4}$ |
| Aquæ destillatæ .....          | 8    | fl3ii                |

M. et Sig.: One drop instilled into the affected eye, three times daily.

If undesirable symptoms from the action of atropin occur, such as very uncomfortable drying of the throat, palpitation, flushing of the face, and cerebral excitation, then the stronger atropins must be discarded and homatropin used.

| R.                             | c.c. |           |
|--------------------------------|------|-----------|
| Homatropinæ hydrobromidi ..... | 40   | or gr. vi |
| Aquæ destillatæ .....          | 10   | fl3iiss   |

M. et Sig.: One drop in the affected eye every hour.

[If both eyes are inflamed, the strength of the above preparations, in order for a drop to be used in each eye, must be reduced.]

During the course of the inflammation the tension of the eye must be carefully watched lest glaucoma develop, though a temporary increase in intraocular pressure is often seen. As soon as the eye shows increased tension, Brav thoroughly evacuates the bowels, gives absolute rest, and stops the atropin. If the tension does not then in a few hours decrease he uses eserin, as:

| R.                            | c.c. |                      |
|-------------------------------|------|----------------------|
| Physostigminæ sulphatis ..... | 03   | or gr. $\frac{1}{2}$ |
| Aquæ destillatæ .....         | 8    | fl3ii                |

M. et Sig.: One drop in the affected eye every hour.

Brav says that it is not often necessary to have recourse to this treatment, and it is rarely necessary to employ surgery to prevent glaucoma from iritis.

The value of atropin in iritis is to dilate the pupil and thus to prevent posterior synechia. It also contracts the iris, thus reducing congestion, and paralyzes the ciliary muscles, thus giving the iris absolute rest.

If the pain from the inflammation is not stopped by the atropin, hot moist compresses, frequently changed, should be employed. Poultices are not needed. If the pain persists in spite of such treatment, leeches should be applied, one or two to the temporal region, care being taken to avoid the large blood vessels. If in spite of such treatment the deep-seated pain in the orbit continues, so as to prevent sleep, morphin must be used, and best hypodermatically.

If the iritis is due to rheumatism, salicylates are advisable; and Brav recommends the following:

| R.                                 | gm. or c.c. |            |
|------------------------------------|-------------|------------|
| Sodii salicylatis .....            | 15          |            |
| Potassii iodidi .....              | 15          | or āā. ̄ss |
| Syrupi sarsaparillæ compositi..... | 100         | fl̄ȳiii    |

M. et Sig.: A teaspoonful, with plenty of water, every four hours.

Brav finds suprarenal solutions useless, and perhaps harmful.

Cocain may be combined with atropin at times, as:

| R.                          | c.c. |               |
|-----------------------------|------|---------------|
| Cocainæ hydrochloridi ..... | 03   |               |
| Atropinæ sulphatis .....    | 03   | or āā, gr. ss |
| Aquæ destillatæ .....       | 8    | fl̄ȳii        |

M. et Sig.: One drop instilled into the affected eye, every three or four hours, if necessary.

The treatment of hypopyon or posterior synechia is a subject for a specialist.

As it is stated that at least 50 per cent. of iritis is caused by syphilis and that mostly in the secondary stage, constitutional treatment during such iritis is that of the syphilis, and mercury is the important drug. Brav thinks it is best administered in the form of an ointment, and advises the rubbing on of 4 grams (1 dram) of the unguentum hydrargyri into the skin twice daily, choosing different parts of the body at each application. If symptoms of mercurialism occur, of course the drug should be temporarily stopped, and during its administration alkaline mouth washes should be used.

When the inflammatory symptoms are declining Brav finds potassium iodid of value in promoting the absorption of the inflammatory products. Syphilis having been the cause of the iritis, of course it must be long treated else the iritis may recur, as well as other symptoms of syphilis.

If rheumatism is the cause of the iritis he would not only give salicylates, as intimated above, but during the height of the disease he would give large doses, as a gram of sodium salicylate (15 grains) every four hours, during the daytime.

After the iritis has subsided, especially after anti-syphilitic or antirheumatic treatment, the patient generally needs iron.

Dr. Higgins, in the article above referred to, says that the treatment of gonorrheal iritis is most unsatisfactory. Mydriatics (atropins) irritate, and rise of tension in the eye is of frequent occurrence; consequently they must be used with caution. He believes in hot fomentations to the eye, and in the value of leeches, and he also sounds a note of warning against the use of suprarenal solutions and cocain. The first effect of their action is satisfactory, but the after-effects are harmful.



# DISEASES OF THE EAR

---

## OTITIS MEDIA

In spite of the increased knowledge of the seriousness of any inflammation in the middle ear, and in spite of the increased tendency of middle-ear inflammations to cause mastoid trouble, since the influenza germ has been prevalent in this country the laity, and even (we regret to say) many physicians still neglect an ear inflammation. So much can be done in the incipency of a middle-ear congestion, and evacuation of the primary exudate is so sure to prevent actual suppuration and serious trouble, that it is little less than astounding that the profession as a whole does not more strongly advocate, urge and carry out these preventive measures. It is also astonishing that mild inflammation in the middle ear, with more or less continuous discharge through a perforation in the drum, is allowed to become chronic without treatment and allowed perhaps to cause permanent deafness. Such neglect, it is also regrettable to say, occurs mostly in children too young to determine for themselves whether they will have permanent deafness the rest of their lives or be properly treated.

We insist to-day that every child should be vaccinated. There is plenty of agitation to prevent and control serious inflammations in the eyes of babies and children. There is gradually accumulating sufficient knowledge of the necessity for glasses for children with defective eyes. The seriousness of obstructive adenoid conditions in the nasopharynx is also being generally recognized. The necessity for fresh air and good hygiene for the prevention of tuberculosis is now most constantly in evidence. But an inflamed ear is very frequently, if it will only rupture, allowed to take care of itself. Nature's healing power often, fortunately, does effect a cure and the hearing is not impaired and serious middle-ear or mastoid trouble does not occur, but the chances of such a happy outcome are too uncertain and too precarious to be tolerated for one moment in this age of prophyl-

laxis. As so aptly remarked by a surgeon of New York recently: Nature is working as hard to continue the growth of what we call pathogenic germs as she is to kill them and eradicate them for our health.

It is not the purpose of this article to advise exactly how an inflamed ear should be treated, as we believe that the average practitioner is not equipped to care properly for middle-ear inflammation, but we would urge the immediate reference of such inflammations to the ear specialist.

All kinds of bacteria may reach the middle ear, but the most frequent infections are the streptococcic and the pneumococcic. In a healthy ear the bacteria reach the tympanic cavity through the Eustachian tube, and this presupposes a nasopharyngeal infection and inflammation. Obstruction at the mouths of the Eustachian tubes, or swelling in the tubes, then inhibits the normal aëration of the tympanic chamber and predisposes to infection of the middle ear. Hence prophylaxis of middle-ear inflammations consists in the removal of obstructive adenoids in the nasopharynx, in the removal of obstructive hypertrophies of the nasal passages so as to cause proper nasal respiration and the correction, so far as possible, of nasal and nasopharyngeal chronic inflammations.

In acute inflammations of the nose and nasopharynx when the Eustachian tubes are likely to become obstructed and bacteria are likely to reach the middle ear, a proper cleansing of the nose and nasopharynx with warm, mildly antiseptic and alkaline sprays and gargles is the proper treatment. Nasal douches as generally applied are likely to force fluid, pus and bacteria into the middle ear, and, in fact, a douche should never be taken through the nostrils with any but the most gentle pressure. Snuffing mild, warm, alkaline fluids through the nostrils, or gently spraying and then snuffing, or possibly the pouring of such a fluid from a spoon or small vial into the nostrils can do nothing but good and no harm to the Eustachian tubes. Or gentle spraying into the nasopharynx with such solutions or gargling and throwing the head forward so that the liquid washes the roof of the pharynx, will also remove products of inflammation, pus and mucous from these parts and from the mouths of the Eustachian tubes.

If middle-ear congestion occurs the diagnosis must be made as to whether serum or other fluid is present or not. If fluid is present, as shown by bulging of the tympanic membrane and by deafness, incision of the drum must be immediately made. If no fluid is present in the tympanic cavity, but the drum shows congestion and there is pain, the following ear drops may be used:

| R.                 | gm. or c.e. |            |
|--------------------|-------------|------------|
| Acidi borici ..... | 1           | gr. xv     |
| Glycerini .....    | 25          | or fl. ʒi  |
| Aquæ .....         | ad 50       | ad fl. ʒii |

M. et Sig.: Warm, and pour half a teaspoonful into the ear once in three or four hours.

This fluid should be held in the ear a minute or two and then allowed to run out. The outer part of the canal is then gently dried with absorbent cotton and a plug of cotton left in the orifice.

If preferred, either of the following prescriptions may be used:

| R.                  | gm. or c.e. |              |
|---------------------|-------------|--------------|
| Acidi borici .....  | 1           | gr. xv       |
| Glycerini .....     | 10          | or fl. ʒi ss |
| Tincturæ opii ..... | 5           | fl. ʒiii     |
| Aquæ .....          | ad 50       | ad fl. ʒii   |

M. et Sig.: Warm, and place a few drops in the ear every hour, if needed, and then plug with cotton.

Or:

| R.                       | gm or c.e. |           |
|--------------------------|------------|-----------|
| Adrenalin chloridi ..... | 03         | gr. ss    |
| Glycerini .....          | 20         | or fl. ʒv |
| Aquæ .....               | ad 25      | ad fl. ʒi |

M. et Sig.: Warm, and pour half a teaspoonful into the ear every three hours.

It should again be emphasized that treatment, even as simple as the above, should only be used to relieve congestion and pain, but such temporizing measures should not be used if the drum is bulging and there is liquid in the middle ear. The only treatment for this condition is incision.

Treatment after incision or after perforation of the drum, or of mastoid congestion, and of mastoid inflammation, belongs to the specialist. The restoration of a perfect drum and the recovery of perfect hearing after middle-ear disturbance, and especially after mastoid inflammation, marks a success as great as in any branch

of medicine. The general physician's duty ends when he has referred a patient with either acute or chronic ear disturbance to the specialist, and after he has impressed on his patient that the time to prevent, if possible, deafness and the danger of a possible cerebral abscess is now. If the patient neglects his own treatment after warnings, he has only himself to thank, but let him never be allowed the opportunity to blame his physician.

# DISEASES OF THE SKIN

---

## SCABIES

While the diagnosis of "itch" is considered perfectly easy to make, and, having been made, the treatment is likewise considered simple and always the same, it is well pointed out by Dr. Douglas M. Montgomery, San Francisco (*California State Journal of Medicine*, February, 1909) that the diagnosis is not so simple, and that the treatment should not always be the same, and that with any treatment the itch is often difficult to eradicate.

If the burrows and the itch mite are found, of course, the diagnosis is made, but there are many cases of itch in which the burrows are difficult of discovery, and the itch mite is elusive and evades the dermal scrapings for microscopic examination. Even the itching varies with different individuals, some few being very tolerant of the irritation and thus becoming conveyors and transmitters of the disease without their personal knowledge.

Various types of skin irritation develop during the various stages of scabitic inflammation. There may be papules, vesicles, pustules and crusts. The severest itching is generally present at night, and especially on first retiring.

"The burrow or run is made by the female in the lower layers of the cornified epithelium of the skin." These burrows, or "roughened, curved furrows," occur most frequently on the anterior surfaces of the wrists and between the fingers. Sometimes these burrows are simulated by dirt-filled lines in the epidermis. The diagnosis can generally then be made by shaving off the suspected epidermis with a scalpel, then laying the epithelial slice on a slide, adding a drop of glycerin, placing a cover glass over it and examining with a low power lens. If the eggs of the itch mite, or the mite itself, are found, the diagnosis is established.

When the fingers and hands do not show signs of this infection, signs may be discovered on the elbow tips, and



on the nipples in women. When there is a generalization of the disease, characteristic signs and eruptions will be seen on the hands, wrists, axillary folds, abdomen, nates, in the popliteal spaces, and more or less on the genitals.

It should not be forgotten that the itch may be present in a mixed infection; in other words, there is more or less eczema from the irritations and scratchings, there may be nodular and suppurative processes, enlarged glands and syphilitic eruptions.

The disease does not seem to be acquired in ordinary social life, but is caught mostly in bed, from individual to individual, or by sleeping in an infected bed.

### TREATMENT

Montgomery believes that the treatment generally advised for scabies is too rigorous, and declares that many of the prescriptions ordered "are more of a cure for lassitude than for the itch." The parasitocides most used in eradicating the itch are sulphur, betanaphthol, balsam of Peru, cresol and styrax.

The patient should be instructed to take a hot bath, using plenty of soap and thoroughly cleansing, perhaps with a soft nail brush, the parts where the parasites are mostly located. He should then anoint all parts of his body with the sulphur ointment prescribed, and should especially rub it into the parts most affected. This same treatment should be carried out on nine successive nights, says Montgomery. He advises during the whole course of treatment that the patient "should wear a full suit of woolen underclothing, so that the ointment, by getting into the underwear, may be returned to the skin and rubbed in with every movement of the body." Therefore he should wear the same undershirt and drawers during the whole nine days and nights of treatment, only taking them off to rub in the ointment. It would seem as though the sort of clothing would depend much on the time of year and the patient. It is frequently better to use old cotton underwear during this treatment and to change it several times during the nine days.

### SULPHUR

The official sulphur ointment contains 15 per cent. of sulphur, and is stronger than should generally be used.

on account of the irritation and actual dermatitis that it may cause. Either one of the following is preferable:

| R.                          | gm. or c.c. |          |
|-----------------------------|-------------|----------|
| Sulphuris loti .....        | 10          | or ʒiiss |
| Adipis benzoinati, ad ..... | 100         | ʒiii     |

M. et Sig.: Use externally, as directed.

| R.                       | gm. |           |
|--------------------------|-----|-----------|
| Unguenti sulphuris ..... | 50  | or        |
| Adipis benzoinati .....  | 50  | āā, ʒiiss |

M. et Sig.: Use externally, as directed.

In mild cases of this disease thorough bathing and cleansing of the affected parts with strong alkaline soap, rubbing and dusting the rest of the body with washed sulphur, and then dusting the sheets of the bed with this dry sulphur, may cause an eradication of the disease without the necessity, discomfort and nastiness of ointments.

#### BALSAM OF PERU

Very popular in treatment of the itch to-day is the balsam of Peru. It may be used alone or combined with sulphur. Montgomery makes use of it in the following combination:

| R.                          | gm. |           |
|-----------------------------|-----|-----------|
| Sulphuris precipitati ..... | 12  | or        |
| Balsami Peruviani .....     | 12  | āā, ʒiii  |
| Adipis lanæ hydrosi .....   | 50  |           |
| Petrolati, ad .....         | 100 | āā, ʒiiss |

M. et Sig.: Use externally, as directed.

In infants, or when there is considerable dermatitis, Montgomery uses the balsam alone, as follows:

| R.                        | gm. |        |
|---------------------------|-----|--------|
| Balsami Peruviani .....   | 25  |        |
| Adipis lanæ hydrosi ..... | 25  | or     |
| Petrolati .....           | 25  | āā, ʒi |

M. et Sig.: Use externally, as directed.

Although balsam of Peru may be painted all over the skin in full strength, it should not be forgotten that it may cause serious dermatitis. When the balsam of Peru is used alone, only a small amount is required for each application, and 10. grams (2½ drams) is sufficient to rub over the entire body. "Such an application should be made twice a day for two succeeding days, and the patient should neither bathe nor change his

underclothing for four or five more days, after which a bath is taken." The undergarments used with the balsam of Peru treatment must be thrown away, as they can not be cleansed.

#### OTHER PARASITICIDES

If it is deemed best not to use sulphur or balsam of Peru, styrax may be used as follows:

| R.                                       | gm. or c.c. |            |
|--|-------------|------------|
| Styracis .....                           | 25          | 3i         |
| Alcoholis .....                          | 10          | or fl. 3ss |
| Olei olivæ .....                         | 65          | fl. 3iiss  |
| M. et Sig.: Use externally, as directed. |             |            |

Or styrax may be combined with balsam of Peru as follows:

| R.                                       | gm. or c.c. |    |             |
|--|-------------|----|-------------|
| Styracis .....                           | 80          | or | 3iiss       |
| Balsami Peruviani .....                  | 20          |    | 3v          |
| Alcoholis .....                          | 15          |    |             |
| Glycerini .....                          | 15          |    | āā, fl. 3ss |
| M. et Sig.: Use externally, as directed. |             |    |             |

Also valuable as parasiticides in scabies are betanaphthol and cresol. The former may be used as follows:

|  |     |    |      |
|--|-----|----|------|
| R.                                       | gm. |    |      |
| Betanaphtholis .....                     | 7   | or | 3iss |
| Petrolati .....                          | 100 |    | 3iii |
| M. et Sig.: Use externally, as directed. |     |    |      |

This ointment may be used in the same manner as are the sulphur applications.

Cresol may be used as follows:

| R.   | c.c. |    |
|--|------|----|
| Liquoris cresolis compositi .....                            | 50   | or |
| Olei olivæ, ad .....   | 100  |    |
| M. et Sig.: Rub into the affected parts morning and evening. |      |    |

Montgomery finds dermatitis or severe irritation is less likely to be caused when the medicament used is varied during the progress of the treatment. Therefore he often uses a sulphur and balsam of Peru ointment for three days, then a betanaphthol ointment for three days, and then, perhaps, a cresol treatment for the remainder of the time.

If dermatitis is caused he recommends the application of the following paste, viz.:

| R.                     | gm. or c.c. |         |
|------------------------|-------------|---------|
| Acidi salicylici ..... | 1 50        | gr. xx  |
| Amyli .....            | 15          | or      |
| Zinci oxidi .....      | 15          | āā, ʒss |
| Glycerini .....        | 30          | fl.ʒi   |

M. et Sig.: Apply twice a day.

As to general disinfection, Montgomery finds that boiling the patient's underclothing is sufficient. He does not believe it is necessary to disinfect the outer garments, with the exception of the gloves. These he advises should all be either burned, or, if to be used again, thoroughly dusted with powdered sulphur.

### ECZEMA

This troublesome condition is often so difficult to cure that the thoughtful consideration of its treatment by Dr. E. G. Little (*British Medical Journal*, June 5, 1909) is well worth describing.

He makes the very pertinent dictum that it is the patient who has the eczema who is being treated, and not merely the eruption on the skin, and therefore believes it necessary that the patient should be subjected to a very careful physical examination. Also, the urine should be carefully analyzed, the diet should be investigated, and, in fact, no examination is too rigid to thoroughly understand the physiologic (or pathologic) condition of a patient who is suffering from eczema.

Little adopts Tilbury Fox's long descriptive definition of the disease, which it is well to bear in mind, viz.: "Eczema is a catarrhal inflammation of the skin which is mainly characterized by a peculiar discharge, stiffening linen and drying in thin yellow crusts, and having its stages of erythema, papulation, vesiculation, discharge, pus formation, and squamation more or less marked under different circumstances and followed in some cases by the secondary results of inflammation such as hypertrophy, edema and the like."

### ACUTE ECZEMA

This is an erythematous eruption, occurring mostly on exposed surfaces of the body and due to cold or irritants. This eruption may abort at this stage, or it may

go on to vesication, exudates, and even pus infection. The disease is not contagious.

The best treatment of this condition is rest in bed, with a low diet and the use of sedative lotions. Little believes that a pure milk diet is the best. The bowels should be kept loose, best with saline laxatives; it is unimportant which one is selected—Rochelle salt, effervescing phosphate of soda, or artificial Carlsbad salts, a teaspoonful or more (enough for one or two movements of the bowels), taken in a glass of hot water before breakfast.

Little finds the best lotion for the skin to be similar to the following:

| R.   | gm. or c.c. |          |
|--|-------------|----------|
| Acidi salicyli .....   | 10          | or 3iiss |
| Liquoris plumbi subacetatis .....  | 150         | fl. 3v   |
| M. et Sig.: Add one tablespoonful to half a pint of milk, and apply to the inflamed skin every four hours. |             |          |
| [Prepare fresh daily, and shake before using.]   |             |          |

#### CHRONIC ECZEMA

Little urges the necessity for very carefully investigating the patient's work and the possible use of irritants on the parts affected with the chronic eczema, before attempting to treat the disease. In many patients an irritant cause will be found, which if removed, or corrected, will allow the skin to become rapidly healed. If, in the work of the individual, there is a necessity for coming in constant contact with the irritant that has caused the trouble, the cure will be retarded and perhaps prevented. Whether the cause of the eczema be found or not, strong antiseptics or irritants should never be used in the treatment of the condition. If the skin is moist or weeping or red and itching, Little finds that lotions are more sedative than ointments. He suggests the following:

| R.                       | gm. or c.c. |           |
|--------------------------|-------------|-----------|
| Calaminæ præparatæ ..... | 2           | gr. xl    |
| Zinci oxidi .....        | 1           | or gr. xx |
| Aquæ calcis .....        | 10          | fl. 5iii  |
| Olei olivæ .....         | 25          | fl 5i     |

M. et Sig.: Apply with a brush or cotton swab.

This lotion may also be well applied by moistening gauze in the solution, placing it over the diseased skin, and holding it in place with thin bandages. The skin



should never be heated with over-bandaging or thick coverings.

If the eczema has become purulent, the part affected should be subjected for twenty minutes to the action of a mild antiseptic solution, and perhaps the official *Liquor Antisepticus* will be of sufficient strength. It may, however, be necessary to use a bichlorid of mercury solution (1 to 3,000), or perhaps for a shorter period (ten minutes) one-half of a 1 per cent. solution of the official *Liquor Formaldehydi*, in water. The infected areas having been thus sterilized, the above soothing lotions may be applied.

When the oozing from the surface has about ceased and the skin shows a tendency to become dry, Little applies a paste in place of the lotion, and he believes Lassar's paste, or something similar, to be the best. The ingredients of this paste or ointment vary, but Little particularizes the composition as follows:

| R.                    | gm. or c.c. |         |
|-----------------------|-------------|---------|
| Acidi salicyli .....  | 2           | gr. xxv |
| Zinci oxidi .....     | 25          | or      |
| Amyli .....           | 25          | āā, ʒi  |
| Paraffin mollis ..... | 50          | ʒii     |

M. et Sig.: Use externally.

If the skin shows considerable redness and irritation, the salicylic acid may be omitted, or the following ointment may be used:

| R.                        | gm. or c.c. |           |
|---------------------------|-------------|-----------|
| Zinci oxidi .....         | 25          | ʒi        |
| Aquæ calcis .....         | 25          | or        |
| Olei olivæ .....          | 25          | āā, fl.ʒi |
| Adipis lanæ hydrosi ..... | 10          | ʒiii      |

M. et Sig.: Use externally.

This ointment having been spread thickly over the affected areas, a fine powder, as starch, may be dusted over the ointment so that it almost makes a dry dressing; no bandages are needed.

When the patient is first seen during the stage when dry crusts have formed and scabs from epithelial débris are present, local applications are useless until these are removed. To remove these scabs, wet dressings may be used, well applied by soaking clean, sterile gauze in warm boric acid solutions and applying it to the region of the crusts and scabs. These moist applications are then covered with an oil silk or rubber tissue and kept

in place with a bandage. These dressings should be changed as often as they become dry. If pus organisms are present, the skin must be made sterile with one of the antiseptics, and when clean of crusts the above lotion or paste may be applied.

If chronic pus infection is present and the disease is not readily controlled by this treatment, vaccine therapy should be used.

If patches of inveterate eczema have persisted months or even years, associated disease or persistent causes should be suspected. These may be "ichthyosis, varicose veins, gout, diabetes, or tuberculosis." If any of these conditions are found, they should be properly treated, and with their improvement the skin condition will generally improve. A healthy exfoliation of the thickened epidermis may be aided by applying every four or five days the following lotion:

| R.                                   | gm. or c.c. |            |
|--------------------------------------|-------------|------------|
| Phenolis liquefacti .....            | 15          | or         |
| Liquoris picis alkalini (N. F.)..... | 15          |            |
| Glycerini .....                      | 15          |            |
| Alcoholis .....                      | 15          |            |
|                                      |             | āā, fl.℥ss |

M. et Sig.: Paint on the part with a brush, or swab, once in four or five days.

Each day during the interval the diseased surface should be dressed with some soothing lotion or ointment.

If the above phenol solution is too painful, the sensation of the parts may be first dulled with a cocain application.

In chronic eczematous patches occurring about the junction of the skin and mucous membranes, as the lips, vulva, anus, and on the nipple, nitrate of silver applications may be substituted for the above phenol combination. The fissure, or irritated, or inflamed part may be touched lightly with a swab wet with a nitrate of silver solution (15 to 25 per cent.). This may be done at intervals of four or five days, for several times, if necessary. However, prolonged nitrate of silver applications are inadvisable, as they may tend to prevent healing, and perhaps even give sufficient irritation, in older people at least, to cause pathologic growths.

Little has found picric acid in from 0.5 to 1 per cent. solution, in water, valuable as an application for itch-

ing in pruritus and with fissures, and for itching of other excoriated surfaces.

Eczematous patches or fissures about the nipple occurring during lactation are often cured by one or two nitrate of silver applications, great care as to cleanliness after nursing, and by the continuous applications of saturated boric acid solutions.

In very chronic dry eczema Little obtains satisfactory results by applying gauze saturated with tarry preparations, and then covering the gauze with oil silk and bandaging for twenty-four hours. This same treatment may be several times repeated, if necessary. The Unguentum Picis Compositum of the National Formulary would be a suitable preparation for such use.

#### ECZEMA OF CHILDREN

The most frequent cause of infantile eczema seems to be exposure to cold, and such local irritants as hard water, strong soap, dirt and irritation caused by lack of cleanliness and neglect. The treatment is to treat properly any parasitic disease that may be present, to keep the parts that are subject to moisture scrupulously clean, to prevent the use of any irritant on the child's skin that could perpetuate the disease, to keep the part comfortably warm but not overheated, and to prevent scratching by any method that seems best. A simple strawboard splint on the arms, long enough to prevent flexion at the elbows, is generally sufficient to prevent scratching. The above calamine lotion and Lassar's paste will aid in curing the condition, but at times the disease in infants is difficult to cure.

Overfeeding and underfeeding should be prevented. The bowels should be carefully watched, both to prevent constipation and to see that the food is satisfactorily digested, and agrees with the child. It is sometimes advisable to cause the bowels temporarily to be rather loose. While the excessive use of artificial foods is often a cause of eczema in young children, still it occurs when the child is breast fed. Certainly, it is inadvisable to allow a restricted diet of artificial food that contains large amounts of salts. Large amounts of alkalies are certainly contraindicated, and the same is true of much acids. Water should be freely given. Change of air to the country or the seashore seems often advisable. This

is especially true during the heated term, and overheating houses in winter, causing the child to become very warm, will prolong the disease.

Little does not believe that warm bathing of the eczematous child is inadvisable, and believes that the part may be bathed at any stage, with the precaution to use no strong alkaline or irritating soap, and to use either soft water or water that has been made soft by the addition of soothing powders. The inflamed area should never be rubbed, but should be dried by mopping with soft towels or gauze.

If there is much swelling or infiltration of the skin in children, Little administers calcium lactate, doubtless on the presumption that calcium prevents or inhibits exudation. As soon as the edema is less, he stops the administration of the drug. It may be given as follows:

| R.                    | gm. or c.c. |           |
|-----------------------|-------------|-----------|
| Calcii lactatis ..... | 3           | or gr. xl |
| Aquæ cinnamomi .....  | 100         | fl. ʒiii  |

M. et Sig.: Two teaspoonfuls, in water, three times a day, before meals.

Nothing will hasten the improvement of these little patients more than fresh air, quiet, rest, and the prevention of mental as well as physical irritations.

Dr. James N. Winfield, Brooklyn, in the *New York Medical Journal*, March 21, 1908, gives a splendid review of some of the causes of this troublesome condition, and offers some good advice as to its treatment. He estimates that eczema constitutes about one-third of all the skin diseases treated in the dermatologic clinics of the world. It "is a catarrhal dermatitis" which, according to the length of time it has endured, may be termed acute, subacute or chronic. The acute or subacute form, the most frequent in infants, is attended with more or less heat, redness and swelling, while thickening of the skin only occurs when the disease becomes more chronic. This disease of the skin may be divided into "the erythematous, the papulovesicular, pustular and squamous."

The erythematous form is mild; the skin is usually dry, and it "is often described under the name of pityriasis." The papular variety occurs in children, while the vesicular form is the most typical of this disease in



infants, and generally occurs on the face. In this vesicular form the duration of the vesical is usually short and has ruptured, leaving a red, moist surface, when the physician first sees the patient. The skin in infants may show considerable inflammation with a good deal of redness, which constitutes "the infantile eczema rubrum." If these broken vesicles become infected with pus organisms, then pustular eczema occurs, with a purulent discharge and intermixed with brownish crusts or scabs. Squamous eczema may follow any of these types, and really represents an attempt at resolution.

Winfield considers the cause of eczema in the young to be either "external irritants or reflexes from the gastrointestinal tract." Therefore, the diet is an important element in the cause of eczema in infants and young children, and overfeeding is as frequent a cause as the kind of food given. If a teething child has also digestive disturbances, he may develop an eczema, though the teething may not be the direct cause. Intestinal parasites may cause eczema, and Winfield thinks that various reflexes may cause it, such as a tight foreskin or adhesions of the clitoris. Among the external causes are animal parasites, improper clothing, as too much rough woolen next the skin; too tight or improperly arranged binders, etc., or irritating dyestuffs in the clothing. An abnormally dry skin may be the cause of eczema.

#### TREATMENT

Winfield divides the treatment of the disease into two parts: (1) The care of the child; (2) the treatment of the disease. A child with eczema should be clothed as lightly as possible, and flannel underclothing should be avoided. The weight and the warmth of the clothing should be just sufficient to protect the child and not enough to cause much perspiration, or so badly arranged as to cause chafing.

Theoretically water for bathing should be avoided and some bland oil, such as olive oil or almond oil, substituted. But as it is impossible properly to remove the crusts from the eczematous patches, or to remove the normal secretions of the body without water, practically a fine soap and soft water must be used. If rain water or soft water cannot be obtained, bran may be added to the bath, and also sodium bicarbonate. The child hav-



ing been thoroughly dried, he should be well rubbed with almond oil or a pure, fresh cold cream. While such bathing should not be done too frequently, still a properly carried out general bath once every third day, or more frequently if needed, is not so irritant to eczema as is supposed. If deemed advisable, the skin may be powdered after bathing, and Winfield says preferably with a mineral dusting powder, because the vegetable powders such as lycopodium, rice powder or starch take up the secretions, become rancid, and readily serve as culture media. A fine talcum powder may be used, or the oxid or stearate of zinc, with or without bismuth. An infant with eczema should not be held too much, or allowed to become overheated or excited.

Eczema more frequently occurs in children who are improperly cared for, and in those who are fed on artificial foods than in those who are fed with mother's milk or modified cow's milk. In other words, the artificial foods usually contain too much starch. Older children who are allowed to eat too many crackers or much candy are likely to develop the same condition. It should not be forgotten how much water infants and young children need. This simple necessity is often neglected.

Winfield says that after a child has cut its teeth, "milk should still constitute the bulk of its diet, with the addition of beef juice, cream, dry bread and zwieback," and if there is constipation or lack of nutrition, a little olive oil. Orange juice and baked apple may also be added at times with advantage.

When constipation is present, as it generally is in eczematous children, and olive oil or milk of magnesia is not sufficient to relieve it, a small dose of calomel may be given occasionally, or castor oil or rhubarb. But if a stronger drug than magnesia must be given continuously, a preparation of cascara sagrada is the best. Winfield has found malt sugar of advantage in the constipation of infants. Care should be taken, whatever laxative is used, not to cause excessive action and deplete the child, or cause intestinal irritation, as not only will the nutrition of the child be impaired, but the eczema will not be benefited and may be made worse.

The most troublesome symptom of eczema is the itching, and this, fortunately, is generally relieved by proper

external applications. If not, Winfield suggests small doses of bromid or chloral, but this seems inadvisable unless in very exceptional instances. He condemns the administration of arsenic in infantile eczema, and in this we certainly concur. The external treatment is protective, and nothing should be applied to the skin that will irritate it. The scales and crusts should be first removed after softening with olive or almond oil, or with soap and warm water if necessary. Scales and scabs that can not readily be removed should not be torn off, but should be gradually macerated with the oil. Resorcin or phenol may be added to the oil as follows:

| R.                                      | gm. or c.c. |           |
|---|-------------|-----------|
| Resorcinolis .....                      | 60          | or gr. ix |
| Olei amygdalæ expressi.....             | 100         | flʒiv     |
| M. et Sig.: Use externally as directed. |             |           |

Or:

| R.                                      | gm. or c.c. |             |
|---|-------------|-------------|
| Phenolis .....                          | 50          | or gr. viii |
| Olei olivæ .....                        | 100         | flʒiv       |
| M. et Sig.: Use externally as directed. |             |             |

Later the eczematous patches may be washed with soap and bran water or with water containing a small quantity of bicarbonate of sodium. Between such necessary baths the diseased parts may be cleansed with oil. "In the erythematous type of eczema a simple protective ointment, such as cold cream, white petroleum or wool fat is all that is necessary." In other words, what such skin needs is protection, and if the eczematous part is exposed to the outer air it may be well to cover this ointment with one of the dusting powders above mentioned. When there is much inflammation with the eczema (eczema rubrum) the inflamed parts should be dusted with zinc oxid or bismuth, either separately or combined, as:

| R.                         | gm. |         |
|----------------------------|-----|---------|
| Zinci oxidi .....          | 50  | or      |
| Bismuthi subnitratis ..... | 50  | āā, ʒii |
| M. et fac pulverem.        |     |         |

Sig.: Use as a dusting powder.

If there is much irritation a mild boric acid wash, as a tablespoonful of boric acid to a pint of water, may be used. Later Winfield suggests using the following ointment:

| R.                         | gm. |    |        |
|----------------------------|-----|----|--------|
| Hydrargyri ammoniati ..... | 60  | or | gr. ix |
| Zinci oxidi .....          | 1   |    | gr. xv |
| Unguenti aquæ rosæ.....    | 30  |    | ʒi     |

M. et Sig.: Use externally.

If there is much itching, phenol may be added to the above, as:

| R.                         | gm. |    |        |
|----------------------------|-----|----|--------|
| Hydrargyri ammoniati ..... | 60  | or | gr. ix |
| Zinci oxidi .....          | 1   |    | gr. xv |
| Phenolis liquefacti .....  | 30  |    | m. v   |
| Unguenti aquæ rosæ.....    | 30  |    | ʒi     |

M. et Sig.: Use externally.

If eczema has become chronic, either oil of cade or betanaphthol may be used, as:

| R.                      | gm. |    |        |
|-------------------------|-----|----|--------|
| Beta-naphtholis .....   | 1   | or | gr. xv |
| Unguenti aquæ rosæ..... | 30  |    | ʒi     |

M. et Sig.: Use externally as directed.

Or:

| R.                | gm. or c.c. |    |       |
|-------------------|-------------|----|-------|
| Olei cadini ..... | 1           | or | m. xv |
| Petrolati .....   | 30          |    | ʒi    |

M. et Sig.: Use externally as directed.

Tar preparations should not be used carelessly, as they may aggravate the disease and cause an actual dermatitis, although many times an eczema seems hardly to be cured without their aid. Winfield says that occasionally an eczematous skin resents fatty applications, and in this case lotions should be used, such as calamin lotion.

As above inferred from the various causes of eczema, genital reflexes due to adhesions must be corrected, and all skin parasites must be exterminated. When the child's skin is abnormally dry, which it may be even from birth, daily inunctions of oil should be given, and plenty of water should be given internally. For this condition Winfield does not mention thyroid, but many times a small amount of thyroid extract given to a child with such a condition of skin and with recurrent eczemas, is beneficial. The dose should be small, not more than 0.03 gm. (1½ grain) of the dried extract, administered once a day. While such treatment, like all other treatments, is not always successful, it is often of marked benefit, not in acute eczemas, but in the chronic form just mentioned.

## DUSTING POWDERS.

| R.                     | gm. |    |       |
|------------------------|-----|----|-------|
| Acidi borici .....     | 10  |    | 3iiss |
| Zinci oxidi .....      | 20  | or | 3v    |
| Talci purificati ..... | 30  |    | 3i    |

M. et Sig.: Use externally as a dusting powder.

| R.                                      | gm. |    |     |
|---|-----|----|-----|
| Pulveris talci salicylici (N. F.) ..... | 50  | or | 3ii |

Sig.: Use externally as a dusting powder.

This powder contains 3 per cent. of salicylic acid and 10 per cent. of boric acid.

| R.                                 | gm. |    |     |
|------------------------------------|-----|----|-----|
| Pulveris antiseptici (N. F.) ..... | 50  | or | 3ii |

Sig.: Use externally as a dusting powder.

This powder is principally boric acid and contains 0.1 per cent. each of phenol, eucalyptol, menthol and thymol; 0.5 per cent. of salicylic acid and 12 per cent. of zinc sulphate. It is soluble and may be used in 5 per cent. aqueous solution.

| R.              | gm. |    |     |
|-----------------|-----|----|-----|
| Lycopodii ..... | 50  | or | 3ii |

Sig.: Use externally as a dusting powder.

| R.                        | gm. or c.c. |    |       |
|---------------------------|-------------|----|-------|
| Amyli .....               | 25          |    | 3vi   |
| Talci purificati .....    | 25          | or | 3vi   |
| Phenolis liquefacti ..... | 1           |    | m. xv |

Sig.: Use externally as a dusting powder.

## OINTMENTS

The following ointments are sedative and protective:

| R.                         | gm. |    |       |
|----------------------------|-----|----|-------|
| Acidi borici .....         | 10  |    | 3iiss |
| Unguenti zinci oxidi ..... | 20  |    | 3v    |
| Unguenti aquæ rosæ .....   | 20  | or | 3v    |

M. et Sig.: Use externally as directed.

| R.                          | gm. |    |    |
|-----------------------------|-----|----|----|
| Unguenti acidi borici ..... | 30  | or | 3i |

Sig.: Use externally as directed.

| R.                       | gm. |    |    |
|--------------------------|-----|----|----|
| Unguenti aquæ rosæ ..... | 30  | or | 3i |

Sig.: Use externally as directed.

| R.                        | gm. |    |     |
|---------------------------|-----|----|-----|
| Acidi salicyli .....      | 2   |    | 3ss |
| Adipis lanæ hydrosi ..... | 15  | or | 3ss |
| Petrolati albi .....      | 30  |    | 3i  |

M. et Sig.: Use externally as directed.

### ACNE

This troublesome condition or disease, which is so frequent in adolescence and may so many times persist for years, should always be taken seriously. The family physician is more and more frequently consulted early in the disease, and too frequently dismisses the young patient with some recommendation or treatment that is very likely to prove ineffectual. Possibly the increased dust and dirt of our cities causes an increased tendency to the formation of comedones and subsequent acne indurations by quickly coating and sealing the little sebaceous ducts of the face, especially if, as is frequently the case, the patient has a profuse oily secretion.

It is not the purpose of this article to describe all the preparations or local treatments that may or should be used for facial acnes, but to urge, in the beginning of such troubles, a careful investigation of the patient's digestion, general health and habits, as we know that metabolic disturbances (which are so often present during adolescence) and preventable gastrointestinal indigestion are often the primary causes of acne. Also a carelessness and an actual lack of cleanliness, or improper hygiene of the face, is frequently the cause of the development of comedones and acne.

### CONSTIPATION AS A CAUSE

The young boy and young girl, especially in their early teens, are very careless as to the movements of the bowels. Constipation is the bane of America, and its beginning is generally traceable to gross neglect during this period of life. The young child is carefully watched by its mother and the condition of its bowels is known. The boy or girl of 15 is not so watched, and both attending schools, later colleges and seminaries, or hastening to stores or factories, think they have not time to attend to this call of Nature directly after breakfast, the physiologic time for a bowel movement. Young boys and girls go to bed too late, and dislike to arise in the morning until the very last moment, and then have not time to attend to this necessary function.

They also, because of this lack of time, swallow their breakfasts almost without chewing. This is especially



true with mushy, gelatinous cereals, and particularly true of oatmeal. Consequently oatmeal in gummy, sticky, gelatinous masses, the manner in which it is mostly eaten, although considered one of the most nutritious of foods, becomes the most frequent single cause of indigestion in this country. Thin, well-cooked oatmeal and oatmeal gruels are splendid nutriments. Oatmeal boluses are pernicious.

### DIET

The enormous consumption of sweets, candies, ice cream soda and the frequent drinking of soda fountain products is another and increasingly frequent cause of the indigestion that predisposes to acne, and this is another failing of adolescence. Any gastrointestinal indigestion, which includes loss of appetite, perverted appetite, constipation, and abnormal looseness of the bowels, should be corrected and properly treated before it could be hoped to cure or prevent the further development of an acne. Even if there is no actual apparent indigestion, sugars, spices, abnormal amounts of tea and coffee, greasy fried stuffs and hot breads, pancakes, oatmeal and impure syrups should all be removed from the diet.

Many acne patients are anemic, and some girls are chlorotic, and such patients, of course, are improved by the administration of iron or arsenic, or both.

If, in a girl, menstruation is irregular, disturbances seem to be present that predispose to acne, and while it is perfectly correct to tell a mother with a daughter who is apparently well but whose menstruation seems difficult of establishment, or having once begun is exceedingly intermittent, that Nature will take care of this function, it is many times better to correct that function, as having once begun, the girl is certainly better with its perpetuation. A careful investigation into the condition of such a female patient will often show either a malcondition of the blood and lack of proper nutrition, or a disturbance of the thyroid gland, either a hypothyroidism, the most frequent condition, or a hyperthyroidism possibly. In any of these conditions the patient can be improved by proper treatment.

## EXERCISE—MENTAL AND PHYSICAL

Some patients with acne, especially girls, are suffering from denutrition from over-activity, mental or physical. The parents are largely to blame for this. They stimulate and push the young girl beyond her strength. They are proud of her acquirements, and they want her to excel in everything, or at least have a knowledge of everything. Then the girl is stimulated by the never-ending school competition. And to cap the climax of the mental activity, she is urged as a proper thing, and the parents, teachers and profession think it is proper, to take a course in physical culture. While physical culture is needed and wise, the manner in which it is carried out is often the last straw to break down the physical vigor of a girl who is working up to the limit of her strength. Too many hours of mental work, and too severe "physical culture," are the cause of many a permanent breakdown in the young girls of America, and many times a troublesome acne is an indicator of both nervous strain and physical debility.

Frequently, however, exactly the reverse of this condition occurs, and the flabby, phlegmatic girl or boy who is unwilling to take sufficient physical outdoor exercise develops the unpleasant condition of acne, and he or she should be stimulated to greater activity.

It resolves itself into the axiom, then, that no patient with acne can be well treated or cured without a careful and complete investigation into the whole life of that patient.

Acne is likely to occur, and can never be cured, unless the young boy or girl is taught and carries out the hygiene of thoroughly cleansing the face before going to bed. The oily secretions of the day have accumulated the dust and dirt of the atmosphere, and at night this dust dries the secretions and blocks the channels of exit. Comedones, indurations, acne nodules and pustules are the result. A patient who has profuse oily secretions of the face should not use hot water on the face. Also it is well never to use cold water on the face. The hot water tends to increase the oily secretion by causing congestion, and the cold water tends, by its reaction, to do the same thing. The easiest, most thorough way of cleansing the face is to remove the dust and dirt with

a pure cold cream. A lump of the cold cream the size of a hazelnut or hickorynut is taken in each hand and rubbed gently over the skin. The face is then wiped off with a soft towel and then washed in lukewarm water without soap. In some cases it may be best to inhibit the profuse secretion of the sebaceous glands by bathing the face once or twice a day with dilute alcohol, bay rum or other astringent solution.

As above stated, it is not the purpose of this article to delineate the local treatment of acne, but to urge that more effort be made to prevent the complete development of this disease, which, while not in itself a disturber of the general health, is a cause of acute mental suffering, in the young girl at least.

Dr. Sutton, Kansas City, Mo., in the *Therapeutic Gazette*, Feb. 15, 1908, recommends the administration of a bitter tonic if the appetite is poor and there is none better than nux vomica or gentian, as:

R. c.c.  
Tincturæ gentianæ compositæ.....100| or flʒiv  
Sig.: A teaspoonful, in water, three times a day, before meals.

Or:

R. c.c.  
Tincturæ nucis vomicæ..... 25| or flʒi  
Sig.: Five drops, in a wineglass of water, three times a day, before meals.

When the "utero-ovarian system is not properly performing its function" in young girls, Sutton finds that the administration of ovarian extract is beneficial, as:

R. gm.  
Glandularum ovarianarum siccarum..... 2| or gr. xxx  
Fac capsulas 20.

Sig.: One capsule twice a day, between meals.

He advises using the above capsules for one week, then discontinuing for a week, and then repeating.

If there is a scanty menstrual flow or much dysmenorrhea, he advises the administration of viburnum, as:

R. c.c.  
Fluidextracti viburni prunifolii..... 50| or flʒii  
Sig.: One-half teaspoonful, in hot water, every three hours.

If there is anemia he, of course, uses iron and arsenic, alone or together, taking care not to upset the digestion, as:

| R.                     | gm. |    |                   |
|------------------------|-----|----|-------------------|
| Ferri reducti .....    | 2   | or | gr. xxx           |
| Arseni trioxidi .....  | 04  |    | gr. $\frac{2}{3}$ |
| M. et fac capsulas 20. |     |    |                   |

Sig.: One capsule three times a day, after meals.

He finds ichthyol, or some combination of it, of advantage in relieving the intestinal indigestion of acne patients, and uses it nearly always in this disease.

| R.                               | gm.   |    |       |
|----------------------------------|-------|----|-------|
| Ammonii ichthyosulphonatis ..... | 6     | or | 5iss  |
| Glycyrrhizæ .....                | q. s. |    | q. s. |
| M. et fac capsulas 20.           |       |    |       |

Sig.: One capsule three times a day, after meals.

Sutton prefers the ichthyol in the form of the albuminate, viz., ichthalbin, made up into 5-grain tablets (one three times a day, after meals).

As to local treatment, he recommends that the comedones be expressed each day with an instrument made especially for that purpose, and as to external applications he thinks that lotions are the best, and as a mild application recommends the following:

| R.                          | gm. or c.c. |    |         |
|-----------------------------|-------------|----|---------|
| Zinci sulphatis .....       | 1           | 50 | gr. xxx |
| Sulphuris præcipitati ..... | 4           | or |         |
| Potassii sulphidi .....     | 4           |    | āā, 3i  |
| Aquæ .....                  | 100         |    | flʒiv   |

M. et Sig.: Shake well, and apply with a cotton swab night and morning. [This should be dispensed in a dark bottle.]

When the type of the disease is more severe, all the active ingredients should be increased in strength. "The effect is stimulating, astringent and antiseptic." If the superficial inflammation which is caused by this application is too great, the simple sweet unguentum aquæ rosæ is as satisfactory as any other ointment.

In the deep, indurated forms of acne the pus sacs should be opened with a bistoury, "the contents squeezed out, and the cavities mopped with a tiny cotton swab dipped in pure phenol (carbolic acid)." The above treatment he has found generally satisfactory, and various disagreeable ointments are not needed.

If the disease is aggravated and does not readily yield to treatment, he obtains good results with the x-ray. He prefers to use "a soft tube, placed from 30 to 50 centimeters from the affected area, making the exposures very brief (from two to five minutes at first)."

and repeats the treatment two or three times weekly. If the patient is to be thus benefited, improvement is soon apparent.

---

### WARTS

These common and troublesome excrescences belong to that class of epithelial tumors known as papillomata and are generally described as presenting four varieties, each of which is characterized by the variety of epithelium on which it is prone to appear. *Verruca vulgaris*, appearing on the skin; villous papillomata, on the mucous membrane of the bladder, pelvis of the kidney, and choroid plexuses of the cerebral ventricles; intracystic papillomata, on the inside of cysts of the mammary glands and ovaries; psammomata, on the pia mater of the brain and cord only where they are prone to calcification. The three latter varieties present many interesting anatomic peculiarities, the first variety, *verruca vulgaris*, the common every-day wart, has also several varieties of form, and as for varieties of treatment, they are legion and range from medieval incantation to the equally efficient proprietary nostrum.

Excepting the "anatomic wart" (*verruca necrogenica*), which is not a true papilloma but a tuberculous infection and confined to the back of the hand and fingers—small or large, pigmented or not, single or in groups, there is no part of the skin where they may not appear.

Anatomically, they consist of a base of hypertrophied connective tissue surmounted with an hypertrophy of the papillæ and rete Malpighii and covered with a thickened corneum, the whole change being accompanied with an increased blood supply.

Etiologically, they appear to follow a mild local irritation; beyond this their origin is uncertain.

Their occurrence is most frequent in children, they are less common during adolescence, and adults have them least, though not infrequently a predisposition to their formation seems to follow through life.

### INTERNAL MEDICATION.

Occasionally they disappear as unaccountably as they appear, but generally some local application to remove them is necessary.



If the warts are numerous or there is a tendency for their reappearance internal medication is advisable at the same time. Arsenic in some form holds first place, perhaps best as:

For a child:

|                                  |        |         |
|----------------------------------|--------|---------|
| R.                               | c.c.   |         |
| Liquoris potassii arsenitis..... | 60     | or m. x |
| Aquæ cinnamomi .....             | ad 150 | ad fl3v |

M. et Sig.: A teaspoonful, in water, three times a day, after meals.

For an adult:

|                                  |        |           |
|----------------------------------|--------|-----------|
| R.                               | c.c.   |           |
| Liquoris potassii arsenitis..... | 6      | or fl3iss |
| Aquæ cinnamomi .....             | ad 150 | ad fl3v   |

M. et Sig.: A teaspoonful, in water, three times a day, after meals.

Epsom salt has also been used with success, as:

For a child:

|                          |             |           |
|--------------------------|-------------|-----------|
| R.                       | gm. or c.c. |           |
| Magnesii sulphatis ..... | 1           | or gr. xv |
| Aquæ .....               | ad 150      | fl3v      |

M. et Sig.: A teaspoonful, in water, three times a day, after meals.

For an adult:

|                          |             |        |
|--------------------------|-------------|--------|
| R.                       | gm. or c.c. |        |
| Magnesii sulphatis ..... | 25          | or 3vi |
| Aquæ .....               | ad 150      | fl3v   |

M. et Sig.: A teaspoonful, in water, three times a day, after meals.

#### EXTERNAL APPLICATIONS

|                                    |             |           |
|------------------------------------|-------------|-----------|
| R.                                 | gm. or c.c. |           |
| Hydrargyri chloridi corrosivi..... | 1           | or gr. xv |
| Collodii flexilis .....            | 25          | fl3vi     |

M. et Sig.: Paint on the wart once a day.

*Blakko's Ointment:*

|                            |             |            |
|----------------------------|-------------|------------|
| R.                         | gm. or c.c. |            |
| Potassii bichromatis ..... | 20          | or gr. iii |
| Petrolati .....            | 30          | 3i         |

M. et Sig.: Rub into the wart at night.

*Mantellin's Paint:*

|                        |             |          |
|------------------------|-------------|----------|
| R.                     | gm. or c.c. |          |
| Chlorali hydrati ..... | 1           | gr. xv   |
| Acidi salicylici ..... | 4           | 3i       |
| Acidi aceticæ .....    | 1           | or m. xv |
| Ætheris .....          | 5           | fl3ss    |
| Collodii .....         | 15          | fl3i     |

M. et Sig.: Paint on wart once a day.

From the *Bulletin Général de Thérapeutique*, Feb. 23, 1908:

| R.                            | gm. or c.c. |        |
|-------------------------------|-------------|--------|
| Extracti cannabis indicæ..... | 1           | gr. xv |
| Acidi salicylici .....        | 2           | or 5ss |
| Collodii .....                | 40          | fl3x   |

M. et Sig.: Paint on the wart once a day.

When none of these methods are successful there remains electrolysis, cauterization and curettage. Cauterization may be done with the actual cautery or one of the escharotics. Of the latter, nitric acid is generally the choice, a drop from a glass rod being placed on the wart, being careful not to touch the surrounding skin. This method, however, is not the one of choice, as it frequently results in an unnecessary amount of inflammation and frequently secondary infection.

Electrolysis is perhaps the most elegant method, but if the wart is so situated as to make cosmetic effect desirable it requires considerable experience and skill in the use of the electric needle.

Finally, curettage offers a speedy, certain and, if properly done, painless method of removal. The wart and surrounding skin are thoroughly scrubbed as for any other surgical procedure, and the wart and healthy skin about it for about one-fourth inch are then frozen with ethyl chlorid. A few strokes with a sharp curette will then remove the wart entire, and the resulting tiny wound may be dressed with a simple antiseptic, or perhaps just as well with a dry aseptic dressing.

Dr. M. B. Hutchins, Atlanta, Ga., recommends the following as a successful treatment of these troublesome affairs:

He first shaves warts on the fingers and hands down almost to the bleeding point. He then applies "a little heap of salicylic acid" to the base of the wart and covers it tightly with a piece of adhesive plaster, renewing this application daily. The remnant of wart is soon removable. This method he says is painless and leaves no scar.

Old and hard warts alongside and under the edge of the finger nail he finds yield best to high frequency sparks or to pyrogallie acid powder applied as above and sealed on with adhesive plaster.

The soft warts of the face and eyelids he finds yield most perfectly to mild negative electrolysis.

| R.                          | gm. or c.c. |    |        |
|-----------------------------|-------------|----|--------|
| Acidi salicyli .....        | 1           | or | gr. xv |
| Liquoris formaldehydi ..... | 1           |    | m. xv  |
| Petrolati albi .....        | 15          |    | ℥ss    |

M. et Sig.: Rub into the part affected twice daily.

### IMPETIGO CONTAGIOSA

Dr. R. T. Sutton, Kansas City, Mo., in the *New York Medical Journal*, Aug. 1, 1908, briefly discusses the diagnosis and treatment of this troublesome skin disease. While ammoniated mercury is recommended as one of the most effective treatments of this trouble, Sutton thinks the mistake is made of using too strong preparations. The official ointment, unguentum hydrargyri ammoniati, contains 10 parts of white precipitate in 90 parts of benzoinated lard, and this he thinks is too strong for most effective use. He finds an oily preparation better than a fatty preparation, viz.:

| R.                         | gm. or c.c. |    |         |
|----------------------------|-------------|----|---------|
| Hydrargyri ammoniati ..... | 1           | or | ℥iiss   |
| Olei olivæ .....           | 100         |    | gr. xiv |

M. et Sig.: Shake well and apply freely several times a day.

If deemed advisable, compresses may be soaked in this solution and kept in place over the affected areas by means of bandages or adhesive plaster. In the hairy parts of the body, as in the beard, a continuous application for twenty-four hours of the above solution will loosen all crusts and allow the antiseptic to reach the germs of infection and will inhibit the spreading of the disease. Sutton finds such treatment renders a cure possible in a week, whereby with other treatments from two to four weeks are needed.

While treating the disease locally he would also improve the patient's general condition, if that was below par, as it is doubtless true that anything that reduces the patient's ability to fight this infection will make the cure of the local disease more difficult.

### PSORIASIS

Dr. Kanoky, Kansas City (*Dietetic and Hygienic Gazette*, January, 1908), discusses the treatment of this disease. If the diseased areas are thick and indurated, he advises scraping off the scaly tissue with a sharp

curette. "The patches should then be thoroughly scrubbed with hot water (rendered alkaline by the addition of borax or sodium carbonate) and the liniment of soft soap, using a stiff bristle nail brush."

When the disease is mild and the scaly patches are few in number and parakeratosis is slight in degree, he obtains good results from the following:

| R.   | gm. |    |        |
|--|-----|----|--------|
| Chrysarobini .....                                     | 1   | or | gr. xv |
| Liquoris guttæ perchæ (N. F.) .....                    | 10  |    | 3iiss  |
| M. et Sig.: Apply at night, with a camel's hair brush. |     |    |        |

In a few days the resulting inflammation causes increased desquamation.

When the psoriatic patches are completely denuded of scales he advises the use of a white precipitate ointment such as:

| R.   | gm. |       |            |
|--|-----|-------|------------|
| Hydrargyri ammoniati .....                   | 1   |       | gr. xv     |
| Phenolis .....                               | 2   | 50 or |            |
| Balsami peruviani .....                      | 2   | 50    | āā, gr. xl |
| Petrolati albi .....                         | 45  |       | 3iiss      |
| M. et Sig.: Apply at night, rubbing in well. |     |       |            |

When the disease is severe, especially in regions where there is usually marked thickening, Kanoky says that nothing is more reliable than Dreuw's ointment. "Care, however, must be taken not to apply it over too large a surface at one time."

The formula is:

| R.                     | gm. |    |         |
|------------------------|-----|----|---------|
| Acidi salicylici ..... | 10  |    | 3iiss   |
| Chrysarobini .....     | 20  |    |         |
| Olei rusci .....       | 20  | or | āā, 3v  |
| (Oil of birchwood)     |     |    |         |
| Saponis mollis .....   | 25  |    |         |
| Petrolati .....        | 25  |    | āā, 3vi |

M. et Sig.: "Rub in well, with a stiff brush, for five evenings. Then take hot baths on three successive evenings, using applications of olive oil in the meantime (to soften the skin). Repeat if necessary."

"When there are patches of psoriasis on the face or scalp only the white precipitate ointment should be used, as the chrysarobin is likely to give rise to severe erythema and edema in these regions."

Of all internal remedies Kanoky finds arsenic the most trustworthy, and advises the "Asiatic pill," which is as follows:

| R.                          | gm.      |       |           |
|-----------------------------|----------|-------|-----------|
| Arseni trioxidi .....       | 25       |       | gr. iv    |
| Piperis .....               | 2        | 50 or | gr. xl    |
| Pulveris gentianæ compositi |          |       |           |
| Glycerini .....             | āā q. s. |       | āā, q. s. |

M. et fac pilulas 100.

Sig.: Commence with one pill before each meal, and increase one pill every second day until the full physiologic effect is secured. Then decrease one pill a day every second day.

There is no chemical or pharmacologic reason why this preparation of arsenic should be any more valuable than any other preparation. The very fact, as Kanoky states, that the average person may take more arsenic in this manner than in any other way shows that the pills do not readily dissolve and the arsenic does not get into the system. In pushing arsenic for physiologic effect either very soluble tablets or a liquid preparation, as Fowler's solution, should be the preparation selected. It is not a question of how much arsenic a patient can take before getting physiologic effect; it is a question of obtaining the physiologic effect, and if one drop of Fowler's solution will do as much as two or three of the "Asiatic pills," it simply shows that the "Asiatic pills" are not absorbed. Also, arsenic should be given after meals, and not before. Hence the best preparation is:

| R.                               | c.c. |    |    |
|----------------------------------|------|----|----|
| Liquoris potassii arsenitis..... | 25   | or | ℥i |

Sig.: One drop, in water, three times a day, after meals.

Increase this dose one drop a day, viz., give four drops the second day, five drops the third, and so on, until the physiologic action is in evidence, that is, until any of the following symptoms appear: Pain in the stomach, nausea, vomiting, diarrhea, reddened eyelids, or puffing under the eyes in the morning. Any of these symptoms should cause the arsenic to be stopped for a day or two and then begun at a smaller dose than that which caused the effect. Also the urine should be frequently examined for albumin and blood.

Kanoky says that the effect of arsenic is not only curative, but prophylactic as well, and it should be repeated at intervals long after the attack has subsided. If arsenic fails to produce satisfactory results, he advises the use of potassium or sodium iodid. He states



that thyroid extract sometimes exerts an almost magical influence in this disease. It should be remembered that the dose of thyroid should not be large; a small dose should be taken for a considerable length of time to cause beneficial systemic results. Large doses, or even medium doses long continued, may cause serious disturbances.

R. gm.  
Glandularum thyroidearum siccarum.... 2| or gr. xxx  
Fac capsulas 20 (dry).

Sig.: A capsule, with water, three times a day, between meals.

"In stubborn, obstinate psoriasis the x-ray and chromotherapy may be used with advantage."

## BOILS

Dr. G. T. Jackson, New York, describes his treatment of these troublesome affairs in the *American Journal of the Medical Sciences*, June, 1909. He believes that boils are entirely due to local infection with staphylococci; that they occur most frequently at parts that are injured or irritated, as the back of the neck, from the chafings of stiff collars; that groups of boils occur from the spreading of the infection; and that the same infection can cause an epidemic of them in groups of associated persons. In other words, he does not believe that a constitutional disturbance has anything to do with the eruption of boils. Anything that causes irritation of the skin, as scabies, and the itching and consequent scratching and abrasion of the skin gives an opportunity for the pus organism to gain access to the deeper tissues.

Although boils are not caused by a constitutional condition, it is certainly true that eradication of the infection is much easier when the systemic condition is perfect than when the normal fighting power or tone of the individual is deteriorated. Therefore, it seems to be true that when there is constitutional weakness and a boil develops others are more likely to occur than in individuals who are otherwise well.

The old-fashioned poultices to hasten the "pointing" of the boil is a very good way of causing the infection to spread and to infect other parts. Such warm, moist,

sticky applications most beautifully promote the growth of the germ of infection, and especially after the boil has been opened.

Jackson's method of treating boils, which method he attributes to Dr. George H. Fox, is as follows:

If the patient is seen before the boil has "pointed," "it may be aborted by injecting into it a drop or two of a 5 to 10 per cent. solution of phenol (carbolic acid), or by just touching the raised surface of the boil with 95 per cent. phenol and then covering the boil and the surrounding surface of the skin with an ointment containing from 5 to 10 per cent. of salicylic acid."

If the boil has already pointed, "a small bit of cotton is wound around a sharp pointed stick, which, after being dipped in a 95 per cent. phenol solution, is bored into the soft point of the boil." This is only slightly painful, as the phenol quickly anesthetizes the injured nerves. The pus is thus allowed to escape, and the inside of the boil is disinfected. The indurated mass of the boil should not be squeezed, as by Nature's process the infected region has been thoroughly surrounded by walls of protective leucocytes. Next, "the skin in the region of the boil is washed with peroxid of hydrogen solution or with bichlorid of mercury solution (1 to 1,000), and then a 5 to 10 per cent. salicylic acid ointment is spread on cloth, or several layers of gauze, and gently laid over the boil and surrounding region."

Jackson says that this is generally the end of the boil, but if it is a large one the operation may be repeated on the next day. The ointment should be kept constantly on the affected part for a week. Adjacent boils, or boils on other parts of the body, occurring from a transference of the infection, should be treated in the same way.

If there is severe pain from the distention or congestion of the part affected, instead of using the warm poultices which certainly do relieve pain, although tending to spread the infection, "compresses of hot boric acid solution may be used."

A 10 per cent. salicylic acid ointment may be made as follows:

| R.                   | Gm. |        |
|----------------------|-----|--------|
| Acidi salicyli ..... | 5   | 3iiss  |
| Unguenti .....       | 50  | or 3ii |

M. et Sig: Use externally as directed.

The value of the injection of antitoxic serums made from the infection present in the individual, when furunculosis is generalized or when recurrent abscesses occur in different parts of the body, should not be forgotten. Also, in recurrent furunculosis and in multiple abscesses the value of the internal administration of yeast should be remembered.

#### ABORTIVE TREATMENT

The *New York State Journal of Medicine*, December, 1907, quotes the following as effective in absolutely aborting a boil: The inflamed part should be thoroughly scrubbed with soap and water, then washed off with 50 per cent. alcohol, and then an alcohol compress should be applied to the part and allowed to remain until the alcohol has evaporated. The region is then again washed with soap and water and the suds allowed to dry on, no other dressing being applied. If there is no pus, a single treatment is said to abort the furuncle.

---

#### PRURITUS OF THE PERINEAL REGION

All sorts and kinds of applications, solutions, oils and fats, antiseptics, irritants and sedatives have been used for pruritus of the anal, scrotal and vulvar regions. In many patients only temporary relief is offered by any of these various treatments. Blistering and even escharotic action has been caused, and still with a subsequent return of the disease. The cause seems to be due to an irritating secretion, and the itching caused by this secretion compels scratching, which produces an eczema and even dermatitis.

The most successful treatment thus far offered is that by the *x-ray*, several applications of which for an average of ten minutes at a time, even to the point of causing mild dermatitis, afford prolonged and sometimes permanent relief. If the condition again recurs, one or two applications of the *x-ray* again relieves it, and for a still longer period. The suffering of such patients and the satisfaction at the relief afforded can not be understood except by those who have long been troubled by this condition.

Kromayer (*Deutsche Med. Wochenschrift*, Jan. 9, 1908), reports that he has successfully treated 160 patients by the local application of a 15 per cent. solution of caustic potash. This solution, of course, cauterizes the whole surface to which it is applied, and after the inflammation has subsided will undoubtedly cause temporary improvement, but he also advocates the *x-ray* treatment.

---

## RINGWORM

### TINEA TONSURANS

Dr. R. L. Sutton, Kansas City, Mo. (*American Journal of the Medical Sciences*, March, 1909), describes the treatment of this obstinate and stubborn disease, especially of the scalp and bearded portions of the body. While the *x-ray* is now used frequently to cause the falling out of the hairs, which is so essential to the proper treatment and cure of the disease, Sutton does not advise it, as it is difficult to gauge the intensity of the action of the *x-ray*, and it many times requires more exposure than is advisable. Such treatment should, therefore, not be undertaken without a good deal of experience with *x-ray* activities. The action of the *x-ray* is only of advantage in removing the hairs; it does not seem to kill the fungi, although it may stimulate a healthy inflammatory process that aids in ridding the skin of the organisms. Whether the hair is removed by *x-ray* action or otherwise, Sutton advises the following treatment:

The diseased surface is mopped with tincture of iodine. This is followed in a few minutes by the application of a 2 per cent. aqueous solution of corrosive sublimate (mercuric chlorid). Sutton says: "The powerful effect secured is due not to the individual action of either alone, but to a third, mercuric iodid, an extremely active and powerful, but relatively unstable salt which is formed at the points of contact." He has never seen any unpleasant symptoms occur from this treatment, but he is careful to treat only a small portion of the diseased surface at one time.

Whatever other medicaments are used, he finds that "goose grease is the best skin penetrant."

## TINEA CRURIS

This is a disease that has lately attacked in epidemic form the students of universities and preparatory schools. It occurs on the inner side of the thighs near the body, often spreading to the scrotum, to the abdomen, to the perineum, and to the buttocks. The hairs do not fall out, thus differing from the ringworm that attacks the scalp and other parts of the body. There is slight itching and burning, but the disease may go on for weeks and even months without very much disturbance to the patient. It does not tend to recovery, and will persist until properly treated. In fact, the treatments outlined by most of the books on skin diseases are tediously ineffectual, and the statement is often made that a cure of the disease requires weeks and even months of treatment. Consequently, ordinary treatments of this disease are so unsatisfactory as to be considered of no value.

The following treatment is one that is always effectual and always curative in a short space of time. In the first place, it must be impressed on the patient that reinfection readily and almost persistently occurs unless the greatest cleanliness of the underclothing and even trousers is inaugurated. Also, it is evidently transmitted from patient to patient from the closet seats. Dirty jock straps and suspensory bandages used in athletics are persistent transmitters of the disease. Therefore, clean clothing must be worn after all the washable clothing has been boiled and the trousers have been properly cleaned and properly ironed. Closets must be rendered aseptic by frequent corrosive sublimate baths.

## TREATMENT

The patient should then be instructed to come to the office, bringing clean drawers and a clean shirt, so that after the antiseptic treatment he can put on clothing that is not infected. The different steps in the antiseptic process are:

1. The parts are all thoroughly cleansed with a soft brush or cotton, and liquid soap, and the skin for four or five inches distance from the infected areas should also be cleansed with this soap. The scrubbing should not be very severe, as the skin must not be broken and the epidermis not too severely removed.



2. The infected area should then be wiped over thoroughly with a 2.5 per cent. phenol solution. This will slightly anesthetize the parts to which the stronger antiseptic is to be applied.

3. A cotton swab is now wet with the official formaldehyd solution. This is then lightly swabbed over all the infected parts, which are kept wet for three minutes, provided the patient can stand the burning pain for this length of time. If there is an area that is especially red and inflamed and sensitive, this part may be swabbed with the next solution mentioned before the three minutes have elapsed.

4. The whole area to which the formaldehyd solution has been applied is now thoroughly washed with the 2.5 per cent. phenol solution. This quickly relieves the pain caused by the formalin application.

5. After the burning pain has ceased, the skin is gently dried and talcum powder is dusted over it. The patient then dresses in his clean clothing and takes care that he does not come in contact with any infected garments, beds or closets.

6. After twenty-four hours the patient should report for observation. If severe irritation has been caused by the formaldehyd solution, a 2 per cent. phenol ointment should be applied. If there is not severe irritation or inflammation, the simple talcum dusting powder is to be freely used.

7. At the end of a week the patient is again examined, and if there are any recurrent small areas, which may happen at the margins of the affected region, these are again touched with the formaldehyd solution.

By the above treatment a cure may be expected immediately and certainly within two weeks. The success of the antiseptic treatment is certainly far in advance of the ordinary treatments of this inveterate disease.

The preparations advised are as follows:

|   |      |    |             |
|---|------|----|-------------|
| R.  | c.c. |    |             |
| Phenolis liquefacti .....                         | 2½50 | or | m. xlv      |
| Aquæ, ad .....                                    | 100  |    | ad, fl. ʒiv |
| M. et Sig.: 2.5 per cent. carbolic acid solution. |      |    |             |
| R.  | c.c. |    |             |
| Liquoris formaldehydi .....                       | 100  | or | fl. ʒiii    |
| Sig.: Official formaldehyd solution.              |      |    |             |

| R.        |            | gm. or c.c. |    |      |
|-----------|------------|-------------|----|------|
| Phenolis  | liquefacti | 50          | or | m. x |
| Petrolati |            | 25          |    | 3i   |

M. et Sig.: Apply externally as directed.

In an article on this subject in the *British Medical Journal*, May 8, 1909, Dr. J. O. Symes describes his treatment of this disease. He first removes the superficial epidermis with antiseptics, and uses "a solution of 40 grains of iodine with 20 grains of potassium iodid in an ounce of methylated spirit. Two applications are generally sufficient." The parts are then treated, morning and evening, with the following ointment:

| R.         |              | gm. |    |               |
|------------|--------------|-----|----|---------------|
| Sulphuris  | precipitati  | 2   | or | āā, 3ss<br>3i |
| Hydrargyri | ammoniati    | 2   |    |               |
| Adipis     | lanæ hydrosi | 30  |    |               |

M. et Sig.: Use externally.

Sometimes the affected parts were painted every other day with a camel-hair brush soaked in oil of turpentine, and the following ointment rubbed in every night:

| R.        |              | gm. |       |                  |
|-----------|--------------|-----|-------|------------------|
| Sulphuris | precipitati  | 2   | 60 or | āā, 3ss<br>gr. x |
| Hydargyri | ammoniati    | 2   |       |                  |
| Acidi     | salicyli     |     |       |                  |
| Adipis    | lanæ hydrosi | 15  |       |                  |
| Petrolati |              | 15  |       | āā, 3ss          |

M. et Sig.: Use externally.

The smarting caused by the applications of turpentine are relieved with petrolatum. The average duration of the treatment for a cure is three weeks.

Symes says that, while the *tinea cruris* resembles the *tinea circinata*, they are probably two distinct parasites, for, as distinct from the latter, "the *tinea cruris* germs do not attack the hairs, and the parasite of the *tinea cruris* shows a larger spore and a freer growth of mycelium than *tinea megalosporon*."

## FALLING OF THE HAIR IN WOMEN

The *New York Medical Journal*, Jan. 4, 1908, quotes from an article by Dr. R. Sabouraud (*Gazette de Gynécologie*, December, 1907), on this subject. This writer declares that a woman's general health has nothing whatever to do with her loss of hair, except when such loss follows an acute febrile disease. The trouble is due

to an abnormal amount of oily secretion of the glands of the scalp, except when there is a specific cause. In women the loss of hair begins at the forehead and temples, and the first symptoms of this trouble usually start, according to Sabouraud, between the ages of 18 and 22. At first dry pellicles form on the scalp, which at times may be difficult to remove, and later these are followed by a yellowish, greasy accumulation on the skin, and then the hair begins to fall. For some time this loss of hair occurs mostly in the summertime when the oily secretion is greater than in winter.

Sabouraud says that the prime remedy to prevent this loss of hair is the frequent removal of the greasy accumulation by the vigorous use of soap, and the soap used should not contain enough potash to be irritating. It is not necessary to soap the whole length of the hair, but only about five inches from the roots. "After dry friction of the scalp, the hair should be separated into plaits and the roots of each plait in succession, and particularly the portion of scalp concerned, should be rubbed vigorously with a tooth brush wet with the soap and water." The solid cake of soap should not be applied to the hair, as it will leave undesirable particles of soap on the scalp. After rubbing is completed "the hair and scalp should be rinsed with warm water and dried with a soft towel, with the aid of gentle heat, if necessary." No oil should be applied to the scalp. The author does not say how often this shampoo should be given.

He advises against the use of cantharides, but the substances which he thinks stimulate the growth of the hair are pilocarpin, quinin, caffein and camphor, and he suggests the following formula:

| R.  | c.c.   |            |
|---|--------|------------|
| Pilocarpinæ hydrochloridi .....             | 20     | gr. iii    |
| Aquæ q. s. ad solutionem                    |        |            |
| Spiritus lavandulæ .....                    | 20     | or         |
| Ætheris .....                               | 20     | āā. flʒv   |
| Aquæ ammoniæ .....                          | 2      | flʒss      |
| Alcoholis .....                             | ad 250 | ad flʒviii |
| M. et Sig.: Rub into the scalp as directed. |        |            |

### Removing Superfluous Hair

The *Druggists Circular*, February, 1908, suggests the following as an efficient depilatory:

| R.                      | gm.   |          |
|-------------------------|-------|----------|
| Strontii sulphidi ..... | 8     | 3ii      |
| Zinci oxidi .....       |       | or       |
| Amyli .....             | āā 12 | āā, 3iii |

M. et Sig.: To be used according to directions.

[These powders should be thoroughly mixed and kept dry. When needed for use a sufficient quantity should be made into a paste with warm water and applied to the surface to be deprived of its hair. It should remain from one to several minutes, according to the nature of the hair and skin, but should not remain longer than five minutes. The preparation should be removed immediately when any burning action is felt by the patient. "After the removal of the paste the skin should be gently but firmly scraped with a blunt-edged knife (as a paper knife) until the hair is removed."] The surface thus treated should then immediately be washed with warm water and dressed with some simple soothing emollient," as:

| R.                         | gm.   |       |
|----------------------------|-------|-------|
| Unguenti zinci oxidi ..... |       | or    |
| Unguenti aquæ rosæ .....   | āā 10 | 3iiss |

Sig.: Use externally.

### Dandruff and Incipient Baldness

The following local treatment is quoted from the *Therapeutic Gazette* of June 15, 1907:

| R.                         | gm. or c.c. |          |
|----------------------------|-------------|----------|
| Resorcinolis .....         | 4           | 3i       |
| Betanaphtholis .....       | 2           | 3ss      |
| Chlorali hydrati .....     | 8           | 3ii      |
| Tincturæ cantharidis ..... | 15          | or fl3iv |
| Tincturæ capsici .....     |             |          |
| Olei ricini .....          | āā 5        | fl3i     |
| Spiritus odorati .....     | 100         | fl3iv    |
| Spiritus myrciæ .....      | ad 500      | ad Oi    |

M. et Sig.: Rub into scalp daily.

Shake before using.

### CHILBLAINS

The following simple combination is of benefit for chilblains, painful corns or bunions:

| R.                  | c.c.  |              |
|---------------------|-------|--------------|
| Tincturæ opii ..... |       |              |
| Tincturæ iodi ..... | āā 15 | or āā, fl3ss |

M. et Sig.: Paint once daily over the painful part.

The following are quoted from the *New York Medical Journal*, Jan. 25, 1908:

| R.                  | gm. or c.c. |          |
|---------------------|-------------|----------|
| Acidi tannici ..... | 10          | 3ii      |
| Alcoholis .....     | 20          | or fl3iv |
| Phenolis .....      | 2           | m. xxiv  |
| Aquæ .....          | ad 50       | fl3i     |

M. et Sig.: Paint on the chilblains night and morning.

The following ointment is also recommended for the same purpose:

| R.                         | gm. |        |
|----------------------------|-----|--------|
| Mentholis .....            | 1   | gr. xv |
| Methylis salicylatis ..... | 8   | or 3ii |
| Adipis lanæ hydrosi.....   | 25  | 3vi    |

M. et Sig.: Apply a small quantity frequently, rubbing in until absorbed.

| R.                        | gm.   |         |
|---------------------------|-------|---------|
| Camphoræ .....            | 1 50  | gr. xx  |
| Balsami peruviani .....   | 50    | gr. vii |
| Olei amygdalæ dulcis..... | 10    | or 3ii  |
| Adipis lanæ hydrosi ..... |       |         |
| Aquæ rosæ .....           | āā 25 | 3vi     |

M. et Sig.: Use externally.

### FOR LOCAL SWEATING IN TUBERCULOSIS

| R.                       | gm. or c.c. |       |
|--------------------------|-------------|-------|
| Mentholis .....          | 2           | 3ss   |
| Acidi salicylici .....   | 4           | or 3i |
| Spiritus lavandulæ ..... | 200         | fl3vi |

M. et sig.: Sponge the affected regions with the solution.

### LOTION TO SOFTEN THE HANDS OF LABORERS

The *Druggists Circular*, March, 1908, suggests:

| R.                    | c.c. |           |
|-----------------------|------|-----------|
| Glycerini .....       | 20   | fl3vi     |
| Aquæ ammoniæ .....    | 5    | or fl3iss |
| Spiritus myrciæ ..... | 20   | fl3vi     |
| Aquæ, ad .....        | 100  | ad fl3iv  |

M. et sig.: Apply to the hands after washing and dry by friction.



# SURGERY

---

## SHOCK

In spite of all investigations and of the vast clinical experience, the treatment of shock is still unsatisfactory. The etiology and pathology of the condition is not perfectly understood. Consequently, any scientific investigations that would tend to clarify the cause of shock and the exact condition of the circulation in shock must be welcomed by both physician and surgeon.

It has, of course, long been recognized that acute pain, whether caused by injury, the passage of a calculus through a duct, neuritis, or even acute neuralgia, can cause such a depressed condition of the circulation as to produce shock. Shock caused by severe pain has been supposed to be due to either slowing of the heart and imperfect cardiac contractions by reflexes through the pneumogastric nerve, or by such acute pain interfering with the vasomotor center as to cause greatly diminished arterial tension, and from these actions circulatory depression resulted. It has long been known that abdominal operations particularly predispose to subsequent shock. This has been thought to be due to possible sympathetic nerve disturbance or to a disturbance of the normal activity of the suprarenal glands, or to secondary overwhelming depressant action from the anesthetic.

There can be no question that acute pain from injury or other cause, or that acute pain suffered from the cutting or injury of nerves in incomplete anesthesia, or that acute pain suffered from such an injury, after an operation is over and the patient out of the anesthesia, is a direct cause of shock, and consequently such pain should always be stopped by the amount of anodyne that is necessary to stop it.

## ETIOLOGY

Recent investigations by Yandell Henderson, assistant professor of physiology at the Yale Medical School,

seem to show that the reason that acute pain causes shock is not because the pneumogastric is unduly stimulated, is not because the arterial tension is greatly lowered, but is because the inhibition of metabolism from the pain and the increased respiration caused by the pain makes a greatly diminished amount of carbon dioxid in the blood, as well as a hyperoxygenation of the blood. This lack of carbon dioxid in the blood causes a lack of venous tone, and this lack of venous tone diminishes the amount of blood that reaches the auricles and therefore ventricles of the heart during diastole. This means that the output of the heart from each beat becomes less, and in profound shock insufficient. Henderson has found that, besides the inhibition of pain by morphin, ether and chloroform inhalations, in sufficient amount to prevent the appreciation of pain, will prevent shock. He seems to have demonstrated that even when the anesthetic seems sufficient that the sensitive nerves still note injuries and pain and shock may be caused, unless the anesthesia is profound. This means clinically that anesthesia should always be sufficient before operation and during operation. Henderson has also shown that when shock is present it is more satisfactorily treated, and generally successfully combated, by any means that increases the carbon dioxid content of the blood, and such treatment is far ahead in its success of cardiac stimulants and vasoconstrictors. A lowered arterial tension improves rapidly when physiologic saline impregnated with carbon dioxid is administered intravenously. Such improvement is far ahead of transfusion of physiologic saline that does not contain the carbon dioxid.

Henderson attributes the lowered carbon dioxid content of the blood largely to the nervous excitement before operations causing rapid breathing; also the increased breathing caused by the first part of the anesthesia, ether being particularly a respiratory stimulant, giving a condition of hyperoxygenation and lessened carbon dioxid content of the blood, and shock is therefore easily caused.

Henderson terms this condition of diminished carbon dioxid content of the blood *acapnia* (from the Greek *kapnos*, meaning smoke), literally a smokelessness.

Henderson further finds by other experimentation that intestinal paresis or paralysis, with consequent abdominal distention, is largely due in abdominal operations to exposure of the intestines to the air. The harm done by such exposure he finds is due to the loss of carbon dioxid from the intestinal vessels. Although this amount is small compared with that lost by the lungs in rapid or deepened respiration, this loss added to that from the lungs in abdominal operations predisposes to shock. He also finds that warm moist applications, the method adopted by most surgeons to keep the intestines at the normal temperature, predisposes to a loss of this carbon dioxid gas, and therefore predisposes to intestinal paralysis. He has shown by experiments on dogs that if the exposed intestines are covered so that the atmosphere does not get to them, he can increase normal peristalsis of the stomach, small intestine, and colon by directing under the covering warm air containing carbon dioxid gas. Such gas also prevents the congestion of the exposed intestines.

Articles on these investigations by Henderson will be found in the *American Journal of Physiology*, February, 1909, and April, 1909, and his views were also presented in a practical manner at the meeting of the American Therapeutic Society, held at New Haven, in May, 1909, a brief abstract of which appeared in *THE JOURNAL*, June 5, p. 1868.

#### CLINICAL LESSON

The practical utility of the above experiments shows:

1. Severe pain should never be allowed; it should be prevented by enough of the narcotic which seems indicated in the individual case.

2. Anesthesia should be complete both before beginning operation and during it.

3. In abdominal operations moist warm cloths should not be applied to the intestines, and except in the exact region of operation the intestines should be protected with some covering that will prevent the exchange of gas from the intestines with the external air.

4. A tank of carbon dioxid gas should be at hand to perfuse through warm water to be directed into the abdominal cavity, if shock occurs during abdominal operations.

5. If shock occurs after operations or after other injuries, transfusion into the veins of physiologic saline saturated with carbon dioxid should be done. Also, at any time during shock, air, or oxygen, with moderate amounts of carbon dioxid should be inhaled.

6. Whenever there is likelihood of pain following the recovery of the patient from anesthesia, morphin should be injected to prevent it.

7. However valuable strychnin injections may be as a stimulant to the nerve centers and as a stimulant to general metabolism to perhaps promote normal cellular activity and perhaps therefore the production of a normal amount of carbon dioxid, excessive amounts of strychnin as a cardiac and respiratory stimulant in shock should not be used. Large doses of strychnin, or strychnin repeated too frequently, seem to interfere with the normal diastole of the heart and prevent the normal filling of the heart cavities and therefore the normal output of the heart into the arteries. Henderson seems to have shown that such cardiac stimulants can not increase the output from the heart cavities.

8. Digitalis would rarely be indicated, if ever, in acute shock. The greatest advantage of digitalis is in cardiac dilatation, and its best activity is in cardiac hypertrophy with dilatation.

If Henderson's investigations are of clinical value, atropin as a respiratory stimulant and a vasoconstrictor would seem contraindicated in shock. The same would be true of suprarenal preparations. Nitroglycerin would also probably not be indicated. Alcohol in doses sufficient to cause cerebral depression and therefore inhibition of metabolism would seem to do harm. Camphor as a cerebral stimulant, perhaps thus increasing metabolism, would seem to be indicated, and hypodermic injections of saturated solutions of camphor in olive oil have many times seemed one of the most valuable stimulants in shock. When the exact physiologic action of ergot on the circulation is better understood, probably the reason will be found for the marked benefit in shock and circulatory depression from its subcutaneous injection.

Whatever the outcome may be of clinical experience, with the apparent logical deduction from Henderson's experiments, anything that will prevent the senseless



administration of enormous doses of the so-called cardiac and arterial stimulants and tonics to patients who are in shock will redound to the advantage of the sick.

---

### CHANCROIDAL BUBO

Dr. Henry H. Morton, Brooklyn, N. Y. (*Medical Record*, Jan. 25, 1908), advises for this condition immediate rest in bed and warm applications; he believes that resolution will take place as readily with warm applications as with applications of ice. He finds injections into the enlarged gland of antiseptic solutions, such as nitrate of silver, phenol or bichlorid of mercury, to be useless. Sometimes an alcohol wet dressing, either gauze wet with pure 95 per cent. alcohol and allowed to evaporate slowly by being covered with perforated rubber tissue or a dressing of alcohol one part and water two parts, rather tightly covered with rubber tissue or oil silk, are of advantage. Morton finds tincture of iodine applications of no value as an absorbent.

As soon as fluctuation develops, he changes the warm applications to hot ones to hasten the breaking down of the gland, and after it is thoroughly broken down he makes a small incision with a double-edged knife and evacuates the pus; then a 10 per cent. iodoform glycerin emulsion is injected into the cavity. The injection is made three times at the first sitting, the first two injections being allowed to run out, the last one being retained. The wound is then bandaged over night with fomentations of a solution of the acetate of aluminium. [The strength of the solution is not mentioned. The National Formulary recognizes a liquor *alumini acetatis* of 7.58 per cent.] The next day the contents of the bubo are squeezed out and the iodoform injection is again made three times as before. The gland is then bandaged and left undisturbed for five or six days. At the end of that time, in the great majority of cases, the bubo is healed, and the patient requires no further treatment.

Morton believes that improper treatment of the chancre is often the cause of the bubo. He does not believe in cauterizing the sore with nitrate of silver, believing that the effect of this caustic is superficial and produces a crust which allows the specific organism, *Ducrey's bacillus*, to migrate to the inguinal lymph glands.



## FELONS

Dr. J. Walter Vaughan, Detroit, in the *Journal of the Michigan State Medical Society*, February, 1908, discusses the treatment of this painful affair. He prefers to use the scientific name of "paronychia," and defines it as an acute infection of the finger which usually ends in abscess, and the cause of which is always bacterial. The severity of the inflammation depends on the kind of bacteria present, the streptococcus causing more serious trouble than other pyogenic organisms.

The first essential of treatment is rest as effected by a finger splint, and it is best to splint the adjacent finger as well as the one involved. The infected finger should be bandaged with a moist dressing, and sometimes a small ice application is sufficient to inhibit the infection and effect a cure. Vaughan condemns all carbolic acid injections and applications as tending to cause necrosis. If the ice application does not inhibit the inflammation, the part should be freely incised, care being taken always to cut parallel with and never across the tendons; then a wet dressing should be applied of either a saturated solution of boric acid or a weak bichlorid of mercury solution, as 1 to 5,000 or 1 to 10,000.

Vaughan thinks that free suppuration, healthy granulations and proper healing are all hastened by Bier's hyperemic measures. He thinks hyperemia alone is of no value, but combined with free incision and wet dressings it is useful. He produces this hyperemia by applying "a broad rubber band from three to four inches wide around the arm a short distance below the elbow. Care should be taken that this elastic band is just tight enough to obstruct the free return of venous blood, but not sufficient to interfere with the arterial flow. This rubber band should not cause pain or paresthesia, nor must the arm below the bandage be cold or feel cold." It may cause, however, some edema, hence the dressing around the infected finger should not be too tight. He applies this constriction treatment for periods of from four to six hours at a time, twice a day. He finds that the white blood count will frequently show a greater number of leucocytes in the arm below the bandage than in the blood of the rest of the body. If the periosteum is involved or if there is tendon infection, these structures should be freely and quickly incised.

In palmar abscesses he applies the Bier hyperemic treatment by means of suction cups, "which should be left on from fifteen to thirty minutes at a time, and this will often hasten a cure."

While acute lymphadenitis is a frequent complication in any form of finger infection, and any involvement of the axillary glands should contraindicate the use of local hyperemia, he believes that the constriction method applied early enough may inhibit the passage of these germs to the glands above.

### ULCERS OF THE LEG

Dr. Julius T. Rose, Brooklyn, N. Y., in the *Dietetic and Hygienic Gazette*, February, 1908, offers good advice for the treatment of this troublesome condition. He divides his management under several headings.

1. He believes that most patients need a general tonic treatment, as:

| R.                         | gm. |                   |
|----------------------------|-----|-------------------|
| Strychninæ sulphatis ..... | 04  | gr. $\frac{2}{3}$ |
| Quininæ sulphatis .....    | 2   | or                |
| Ferri reducti .....        | 2   | ãã, gr. xxx       |
| M. et fac capsulas 20.     |     |                   |

Sig.: One capsule, three times a day, after meals.

Or:

| R.  | c.c. |         |
|---|------|---------|
| Tincturæ nucis vomicæ.....                                  | 25   | or fl̄i |
| Sig.: Ten drops, in water, three times a day, before meals. |      |         |

Constipation, if present, should be relieved by a compound aloin tablet, or cascara sagrada, or by the compound rhubarb pill. The food should be properly selected and nutritious, and fresh air should be arranged for house patients, as anything that improves the general nutrition will, of course, aid in the healing of the ulcers. If there is a specific history, of course mercury and potassium iodid are indicated.

2. If there is acute inflammation in and around the ulcer, he applies wet dressings, as:

| R.                                 | gm. or cc. |         |
|------------------------------------|------------|---------|
| Zinci sulphatis .....              | 4          | 5i      |
| Tincturæ lavandulæ compositæ ..... | 60         | or fl̄i |
| Aquæ .....                         | ad 1000    | ad Oii  |

M. et Sig.: Use externally.

Or:

|                  |        |          |
|------------------|--------|----------|
| Ichthyolis ..... | 25     | ad Oi    |
| Aquæ .....       | ad 500 | or fl5vi |

M. et Sig.: Use externally.

Either of these solutions should be applied on a sufficient amount of gauze to keep the leg moist from the ankle to the knee, and sufficiently often to keep the gauze wet. He would also soak the leg two or three times a day in water as hot as can be borne, and after two days of such treatment the inflammation generally subsides. Of course he presumably presupposes that the leg should be kept elevated while such inflammation is in evidence.

3. If there is no inflammation around the ulcers he shaves the leg from foot to knee, to prepare it for the application of adhesive strappings, and then sprinkles powdered naphthalene crystals over the ulcers and covers this with a layer of diachylon ointment, using both generously.

|                   |     |       |
|-------------------|-----|-------|
| R.                | gm. |       |
| Naphthaleni ..... | 25  | or ʒi |

Sig.: Use externally, as directed.

|                          |     |        |
|--------------------------|-----|--------|
| R.                       | gm. |        |
| Unguenti diachylon ..... | 50  | or ʒii |

Sig.: Use externally, as directed.

He next straps the leg from the foot to well above the calf with zinc oxid adhesive plaster, each strap  $\frac{3}{4}$  of an inch wide and nearly long enough to go twice around the leg. He applies the straps as follows: "Hold a strap back of the leg (the foot being supported on a chair or stool), an end in each hand. Bring it forward till the middle adheres to the back of the ankle. then, estimating the amount of tension required, lay one end in an upward direction obliquely across the front of the leg, and then lay the other, crossing the first somewhat below a right angle. Apply the first one farthest down. Let each succeeding strip overlap the preceding one about one-third. Keep up the same amount of tension in laying each strip so that the pressure may be uniform. There must be no folds or bunches, as they might cause the skin under them to blister or ulcerate. Apply over this a muslin or gauze bandage from toes to knee." He allows this dressing to remain for a week or ten days, and finds after such a period that improvement in the

ulcerations is marked. If the granulations do not look sufficiently healthy, he then applies boric acid ointment and again straps for another week.

**R.** gm.  
 Unguenti acidi borici ..... 25|      or      3i

**Sig.: Use externally.**

4. He then proceeds to the next stage in the treatment, viz., he flushes off the granulating ulcers with a solution of salt (a teaspoonful of salt to a pint of boiling water) and then applies skin grafts which he takes from the patient's leg not far distant from the ulcers. An anesthetic is not needed, as he uses a very sharp razor and takes a very thin, little more than epidermal, skin graft. He first places a sharp razor and a small probe in a 5 per cent. phenol solution for about fifteen minutes, then transfers them to a salt solution, and they are ready for use. He cleans the skin from which the grafts are to be obtained with soap and hot water, then flushes with salt solution. The operator next "wraps the left thumb with a single layer of gauze to make it adhere to the skin, then stretches the skin lengthwise of the leg, after wetting it with salt solution." With the razor held lightly as for shaving, "a very thin, translucent graft is cut with a quick sawing motion, using absolutely no pressure." The skin graft will lie on the blade of the razor. It is then immediately transferred to the granulations, which are wet with the salt solution, the probe aiding in its transference to the exact spot desired. After the grafts are all in place, as many as are deemed necessary, and they would best overlap one another and the edges of the ulceration, the air bubbles are pressed out or pricked with a sterile needle. Silver foil or silver leaf is next placed over the graft-covered ulcers, and also over the parts from which the grafts have been taken. Then the leg is strapped as before, but from ankle to calf only, and the parts which overlie the ulcer should be smeared with boric acid ointment to keep them from adhering to the grafts when removing the dressing. This dressing should be left on for two weeks, at which time when the bandage is removed the ulcers will be found healed. However the leg should be restrapped for a week or two, and then, if necessary, an elastic stocking worn or a bandage used.

## BONE TUBERCULOSIS

Dr. W. A. Tatchell (*British Med. Jour.*, Feb. 13, 1909), writing from Hankow, Central China, states that tuberculosis of the joints, bones, glands and skin is one of the most common diseases which he has to treat, and says that he has had splendid results with the application of iodine in tuberculosis of the bones.

He operates on a tuberculous bone as usual, then he thoroughly swabs the cavity with the iodine liniment of the British Pharmacopeia. The application does not cause pain, neither does it destroy tissues as does pure carbolic acid, and granulations do not become excessive. At the first application he leaves a thin piece of gauze in the sinus, but subsequently uses no plugs or strips for drainage, as he believes they have often been responsible for chronic sinuses.

Internally he administers the following:

| R.                        | gm. or c.c. |            |
|---------------------------|-------------|------------|
| Potassii iodidi .....     | 6i          | 3ii        |
| Syrupi ferri iodidi ..... | 75          | or fl.ʒiii |
| Syrupi, ad .....          | 100         | ad, fl.ʒiv |

M. et Sig.: A teaspoonful, in water, three times a day, after meals (best taken through a glass tube).

Linimentum iodidi of the British Pharmacopeia is made as follows:

|                                  |                |
|----------------------------------|----------------|
| Iodin .....                      | 1¼ ounces      |
| Iodid of potassium .....         | ½ ounce        |
| Glycerin .....                   | ¼ ounce        |
| Rectified spirit (alcohol) ..... | 10 fluidounces |



# OBSTETRICS

---

## TOXEMIAS OF PREGNANCY

The disturbances of the last month of pregnancy and some of the severe conditions at parturition are due to varying causes, and the treatment that is efficient and satisfactory in one instance may not be efficient in another.

Dr. Collin Foulkrod, Philadelphia, in the *American Journal of the Medical Sciences*, October, 1908, well discusses this important subject.

He cites the following causes of toxemias due to or during pregnancy: These are intestinal indigestion; disturbances of the parathyroids and thyroid; disturbances in the fetal organism, in the placenta, in the kidneys, or in the liver. He emphasizes the seriousness of changes in the liver, and believes that when metabolic disturbances have involved the liver the patient's condition is serious.

He believes that 50 per cent. of pregnant women suffer from some form of intestinal disturbance, and it is certainly true that intestinal disturbances are concomitant with or preliminary or subsequent to most toxemias.

When instances occur which are positively demonstrable of serious toxemias being caused by prolonged constipation, it is certainly logical to presume that constipation even in a mild form is provocative of the absorption of toxins that should have been eliminated by the intestines. These toxins seriously impair the perfect activity of the liver, to which they first go through the portal circulation. If the liver is so continuously irritated it can not well do its normal work, and more or less toxins or irritants to metabolism soon get through this filter into the systemic blood and cause nervous, circulatory and kidney irritations. Such irritations at first, and perhaps continuously, may be inconsequential, but they may be the forerunners or the instigators of serious conditions in the latter part of the pregnancy. A primary axiom in pregnancy, then, should be that con-

stipation must not be allowed, and such means must be inaugurated and persisted in as will prevent constipation, intestinal stasis, intestinal fermentation, putrefaction and the absorption of toxins. If any one of the digestive organs is not properly functioning it should be assisted, if possible, and the diet so arranged as not to aggravate this disabled organ, and to relieve it of as much work as possible.

#### HYPOTHYROIDISM

It is now acknowledged, both physiologically and clinically, that the thyroid gland normally hypersecretes during pregnancy. This is doubtless necessary to neutralize the nitrogenous poisons that occur from the double metabolism of mother and child. If the thyroid does not secrete properly, various toxemias occur. A malsecreting thyroid can probably allow pernicious vomiting to occur during pregnancy, can certainly interfere with the nutrition of the fetus, can interfere with the health of the mother, and can allow puerperal eclampsia.

If by a careful study of the pregnant patient it is decided that the thyroid gland is not properly secreting, thyroid substance should be administered. The dose during pregnancy should be small. Just preceding parturition, if it is feared that eclampsia may occur, and especially if the kidneys are insufficient, thyroid should be given in large doses; and if eclampsia does occur, it should be given in very large doses. If a patient gives birth to a child showing imperfect development or symptoms of under-thyroid secretion, although it might not be a cretin, certainly thyroid should be administered to the mother throughout her subsequent pregnancies, unless the symptoms present forbade its use. A daily dose for a pregnant patient, short on thyroid secretion, should not be more than 0.20 gram (3 grains) once a day, while a patient who showed serious toxemia or critical symptoms of metabolic poisoning should receive 0.30 gram (5 grains) three or four times a day for a short period. A patient needing thyroid just before or during parturition may be given 0.60 gram (10 grains) once or twice, while a patient with eclampsia may be given 1.30 grams (20 grains) at one dose.

While Foulkrod speaks of disturbance of the function of the parathyroids being possibly a cause of toxemia, it

has not yet been proved. Consequently under what conditions prepared parathyroid gland substance should be administered to the pregnant woman has not been determined, and therefore its administration would be empirical.

Malnutritions of the fetus and degenerations of the placenta may cause the formation and absorption of toxins that will poison the mother. Such toxemias partake of the nature of blood poisoning. The cause being discovered and improvement not soon taking place would seem to call for cleaning out the uterus—this, of course, after a consultation.

Foulkrod does not believe that primary kidney toxemias are so frequent as primary liver toxemias, but believes that a secondary kidney disturbance may be the consequence of almost any toxemia. This has doubtless many times been the cause for laying the blame of pregnancy toxemias on the kidneys when these organs have not been at fault.

As Foulkrod says, a pure uncomplicated true nephritic toxemia should certainly be discovered. A uremic condition from nephritis of pregnancy must almost always be a progressive condition. Consequently a progressive chronic nephritis can only be overlooked by utterly neglecting to make proper examinations of the urine. If a chronic nephritis, by evidences in the urine, shows a progressive inflammation, a final toxemia, due to allowing a pregnancy to continue too long before interference, should be prevented. Consequently the most serious toxemias and eclampsias are those that do not present kidney symptoms or signs until the last moment, and these toxemias are due primarily to disturbances of other organs than the kidneys.

If the kidneys were previously healthy, i. e., if an insidious chronic interstitial nephritis were not present, a nephritis due to pregnancy should be quickly recognized by the albumin in the urine. Therefore, an examination for albumin and casts is usually sufficient to show whether the kidneys are in primary trouble or not. On the other hand, to determine whether liver disturbance or other toxemias are present, Foulkrod urges that it is necessary not only to determine the amount of nitrogen in the twenty-four hours' urine, but the sources of this nitrogen; how much is urea nitrogen, how much

ammonia nitrogen, and how much is purin nitrogen. If, in a pregnant patient who shows disturbances that denote toxemia, the total amount of urine output is greatly decreased and the nitrogen is also decreased, the kidneys may be at fault. If the liver is much disturbed the relation of the urea nitrogen to the ammonia nitrogen is changed, the urea nitrogen being decreased and the ammonia nitrogen increased. If such urinary findings persist, viz., if there is a gradually increased amount of ammonia nitrogen and a gradually decreased amount of urea nitrogen, it shows that there is serious liver disturbance, and Foulkrod advises the induction of labor irrespective of albumin and casts. When there is pernicious vomiting in pregnancy the same changes in the nitrogen output of the urine may take place, and if an increased amount of food can not be in some manner retained, or if retained the ammonia nitrogen output is still high, the pregnancy should not be allowed to go on.

---

### VOMITING OF PREGNANCY

A series of papers in the *New York Medical Journal* for Dec. 28, 1907, and Jan. 4, 1908, completely cover this subject, and the following includes the essential points brought out by the different contributors:

Etiology is touched on but little, and perhaps well so, since the subject is treatment, and the cause, other than that it is unquestionably an intoxication, is largely speculative. There is, however, a considerable number of factors which may modify the underlying cause of this condition so that it ranges from a trivial affair, amenable to domestic remedies, to a condition which baffles the most expert treatment and taxes the facilities of the most complete institutional equipment. Among these may be named reflex influences such as are occasioned by pressure on nerves connected with the uterus, stomach and other abdominal viscera (and of these the most important are those due to displacement of the uterus and its adnexa) neurotic or hysterical, and toxemic. The latter naturally gives the most trouble because, primarily an autointoxication, it is almost invariably a combination of several evils.



The condition most frequently makes its appearance between the third and fifth week of pregnancy.

First, then, a complete history of the patient should be taken, an opinion formed as to her normal mental or nervous temperament, and a thorough and complete physical examination made. If the condition is due to hysteria, the patient should generally be isolated and moved if possible to a situation where she will have an entire change of surroundings and attendants; the treatment then becomes mostly hygienic and suggestive.

#### UTERINE MISPLACEMENT

If examination reveals a misplaced uterus (and probably a retroversion is that most frequently found), replacement should be made immediately and a properly adjusted pessary placed to maintain the correction until such time as the enlarging uterus will retain its proper position unaided. Occasionally adhesions may be found which prevent the manual correction of the fault. The condition then becomes more formidable, and recourse must be had to surgery. The same holds good in incarceration, and in this condition not infrequently corrective measures result in abortion. Erosions of the cervix, cicatrices, and polypi may be causes of the nausea and vomiting, and these if found should receive proper attention. However, surgical procedures, unless of a most trivial nature, should be reserved as a last measure, since they are liable to induce abortion, as are also such procedures as may require either a tampon of any considerable size, or packing of the vagina.

If the vomiting still persists after all corrective measures possible have been made, there remain two conclusions: the vomiting is either idiopathic, or due to autointoxication. The former term, of course, dodges the issue, but nevertheless brings the treatment under two headings, and the conclusion to be drawn from the mass of statistics seems to confirm unquestionably the comparative uselessness of drugs to meet either condition. Almost everything has been used, and with no further benefit generally than a temporary mitigation of the symptoms.



## SUPPORTING NUTRITION

The two great difficulties that confront us are the maintenance of the patient's nutrition and the combating of the prostration caused by the vomiting. Under whichever heading we choose to meet the case, hygienic measures stand pre-eminently first and nothing should be omitted which tends to their furtherance. The diet should be of the simplest, and milk should form its bulk. One after another of the simple dishes must be tried, to be discarded if they are not retained. When the patient is first seen, if the stomach is washed out and nothing allowed but water for twenty-four hours, the bowels being thoroughly cleaned out meanwhile, milk will generally be retained. Just before giving the milk a small dose of cocain, 0.01 gram ( $1/6$  grain) or chloretone, 0.25 gram (4 grains) may cause it to be retained. If it is retained, one or the other of these drugs may precede the further administration of food, lessening the dose each time, and, not infrequently, when a placebo is ultimately substituted for them, the food will be retained as well. Sooner or later, unless conquered, even these so-called idiopathic cases are found to have their etiology in autointoxication and elimination becomes the main point of all treatment.

The urine of course should be examined with great frequency and close watch should be kept on the elimination of solids, but an undue anxiety because of their diminution should not be felt when the intake of food or the food retained is small. A due regard to this should be kept in mind.

The bowels should be moved freely once a day. A single dose, 0.25 gram (4 grains) of calomel with a little bicarbonate of soda, 0.25 gram (4 grains) is preferable if it can be retained; if not, a daily enema must be given. If there appears to be any sluggishness on the part of the small intestines, 0.001 gram ( $1/60$  grain) of physostigmin salicylate should be given hypodermatically once or twice a day, as may be sufficient.

Daily warm baths, with massage, plenty of fresh air, the patient kept in bed, the avoidance of the odor of cooking food, and the avoidance of all measures that tend toward excitement are of advantage. Counter irritation by mustard plaster or turpentine stupes placed

over the stomach is generally a help and sometimes efficient. Also carbonated or effervescing drinks will often be retained when "still" liquids are vomited.

The one drug which has been of most service appears to be sodium (or potassium) bromid. It is best given in one gram (15 grains) doses, well diluted, by mouth, if possible; if not, by rectum, and repeated every two or three hours until the vomiting is conquered or the treatment proves useless.

Although bromids appear to be the most efficient drug, thyroid is not infrequently of use. It should be tried in small doses, say 0.20 gram (3 grains), and if retained, perhaps larger doses, up to 0.50 gram (7½ grains) every four hours for a sufficient number of times to prove or disprove its efficiency. When successful it acts by neutralizing some autocelaborated toxin, which toxin or toxins are present because of an insufficiency of the thyroid gland.

The food, as above stated, should be liquid, and preferably milk, while buttermilk (cold), koumiss, and egg albumin lemonade are useful. Generally small quantities only should be given, and at frequent intervals. When the liquid food becomes well tolerated, semisolid food and the simpler dishes, one after another, may be tried.

When all measures have failed to control the vomiting, and before the patient has actually reached a dangerous condition of prostration, consultation should be had and measures should be taken to empty the uterus. Naturally, of course, one waits as long as possible before doing this, and not infrequently waits too long; hence this caution.

---

### ECLAMPSIA

There is probably no condition that the medical man has to cope with that makes, from prodrome to sequelæ, such demands on his capabilities, his judgment, and his tact as does the symptom complex of this toxemia, for intoxication it is, poorly though we may understand it and little as we may know of its etiology. Having its cause in some wrong going chemistry of either internal secretion or metabolic function, or both, its treatment

must necessarily be elimination until an increased knowledge of the condition permits it to be corrective.

When it is possible to take the patient to a hospital, this should be done at once, for a case of eclampsia can at any moment present conditions which even the resources of a hospital, with its trained attendants, find difficulty in meeting, and these conditions can change with a rapidity which none but institutional resources may attempt to meet. Whatever difference of opinion there may be concerning other features of this condition, there can be no question that more cases are saved under institutional treatment than under any other, and only by reason of their increased facilities. If it be impossible to take the patient to an institution, and home treatment becomes a necessity, then the first thing to do is to prevent self injury to the patient by instructing some one present how to hold a towel, a cork, or a rubber eraser between her teeth, and to keep her on the bed.

#### EXAMINATION

Next, a thorough examination should be made, and if there are convulsions present or the examination starts one, a sufficient amount of chloroform may be given to allow the examination to be completed, and that thoroughly, for it is more important to know the exact conditions present than to start any treatment with an incomplete knowledge of the case.

The examination having been completed, if delivery is indicated the cervix can usually be completely dilated under chloroform without instrumentation, (*i. e.*, with the hand), forceps applied, and delivery completed. The placenta should generally then be removed, not waiting the usual twenty minutes, and the method of Credé is preferable.

Generally there is a tendency to profuse hemorrhage, and the placenta having been removed, the uterus should be thoroughly irrigated with hot physiologic saline solution and it and the vagina packed with sterile gauze. However, the packing being in readiness, it is good judgment to wait a few moments before using it to see if the hot irrigating solution provokes sufficient contraction to stop the bleeding, for if it does, there is

avoided the presence of an unnecessary foreign body in the uterus.

Laceration, if present, should generally be repaired at once, always if it has caused hemorrhage. If not, the patient's condition may occasionally make the postponement of the repair advisable.

If indications for immediate delivery are not found, *i. e.*, if the cervix is not much shortened or not much softened, the os undilated, and few or no uterine contractions (and this last is the most important determining factor, since uterine contractions appear to excite the eclamptic convulsions) eliminative treatment should be started. If there is stertorous breathing, with small pupils, and slow, full, high tension pulse, and if the patient be more or less comatose, "bleeding" is indicated, and from 150 to 250 c.c. of blood should be removed, but whether or not this should be replaced with physiologic saline solution only the condition of the patient at the time can determine, certainly not if there is any edema. If it seems desirable, the quantity of saline introduced should be not less than three or four times that of the blood withdrawn. Next flush out the colon with saline solution and allow 1,000 c.c. or more to remain for absorption, provided of course that there is no edema, and particularly should the lungs be carefully examined with this in mind. Next, wash out the stomach if possible, and if done at all do it thoroughly, leaving in it 0.50 gm. ( $7\frac{1}{2}$  grs.) of thyroid extract and 0.40 gm. (6 grs.) of calomel, with a little sodium bicarbonate. Then apply the hot pack, and when perspiration ceases, usually in about half an hour, dry the patient's skin thoroughly and keep her between blankets.

If thought advisable, *veratrum viride* may be given hypodermatically, in 0.5 c.c. doses until 2 c.c. have been given. The hot pack may be repeated in two or three hours if necessary, and if there is vomiting the stomach may again be washed out, leaving in it another dose of thyroid, and a smaller dose of calomel should there be reason to believe that the first dose was vomited. In short, this eliminative treatment must be kept up until the uterus can be emptied. If it seems inadvisable to wash out the stomach the thyroid and calomel may be given by mouth in the dose above referred to, and the



thyroid repeated every three hours until six doses, or 3 grams have been given. It should then be discontinued.

### STIMULATION

Bladder distention is common and must be borne in mind, catheterization frequently being necessary every six or eight hours for several days after delivery.

Should stimulation be necessary, whisky by rectum and adrenalin hypodermatically, with or without physiologic saline solution, may be used to advantage. Strychnin is generally advised, but its use in conditions of cerebral excitation seems inadvisable. Certainly not more than one dose should be given and that not over  $1/30$  of a grain. If further stimulation appears to be needed, another drug should be substituted for it—either caffeine hypodermatically, or as black coffee by the mouth, and this may be followed, if another change seems advisable, by the hypodermatic use of camphor in olive oil (1 c.c. of the saturated solution), and this may be continued at half-hour intervals.

After delivery, if a sedative is needed, there is none better than a combination of sodium bromid, 2 grams (30 grains), and chloral hydrate, 0.50 gram ( $7\frac{1}{2}$  grains), well diluted and given by rectum. This may be repeated in an hour if necessary, but a single dose is generally sufficient. Morphin is only too frequently advised and given, but in such a condition as this it would seem distinctly contraindicated. There is no pain to combat, and usually the patient will sleep from mere exhaustion if her "nervousness" is controlled.

The quantity of morphin required to control this nervousness will of necessity be altogether more than necessary to meet every other condition, while on the other hand, if her condition is approximating coma, morphin becomes about as dangerous a drug as could be given her.

When delivery is completed the danger is by no means over, and a careful watch of the patient is necessary, for it must be remembered that the sequelæ of this condition are numerous and a patient can not be called out of danger until at least ten or twelve days have passed, and prognosis at any time before this is little more than a guess.



Should the child survive, it is in all probability also toxic. It should be given water freely, and also, perhaps, colon irrigation once or twice daily. Prognosis as to its survival should be absolutely declined.

---

### POSTPARTUM HEMORRHAGES

In a series of papers considering this subject in the *New York Medical Journal* for January 25, February 1, and February 8, 1908, the following digest represents the combined opinions of the contributors:

The causes in general may be summed up as: Those which interfere with uterine contractions or cause relaxation of the uterine muscle; lacerations of the parturient canal, and partial or complete retention of the placenta. The management of the condition presents practically nothing new, viz.: Administration of ergot; removal of uterine contents; repairs of lacerations; massage of the uterus; hot intrauterine douches; packing the uterus.

#### PROPHYLAXIS

Avoid precipitate labors. Avoid protracted labors. Avoid chloroform in slow labors; chloral (one gram, repeated in an hour if necessary) is preferable. Avoid quinin to stimulate contractions, as some observers think it predisposes to inertia. If there is history of hemophilia, give calcium chlorid for three months prior to delivery. At the onset of labor see that the bladder and rectum are empty, and as soon as the head is born ergot should be given (preferably by the hypodermic syringe), and the fundus massaged to stimulate contractions.

If hemorrhage begins during the period between the birth of the child and the expulsion of the placenta, and without evident relaxation of the uterus, it may be due to a partial separation of the placenta or to the fact that the placenta is separated but still within the uterus.

#### TREATMENT

Hemorrhage immediately following the birth of the child may be from the circular artery of the cervix; from a lacerated vagina, or from a lacerated perineum. In such cases, with the use of the speculum and a con-

stant stream of water to wash away the flowing blood. immediate repair of the laceration is usually easy, and correctly placed stitches will stop the hemorrhage.

If the bleeding does not amount to much more than oozing, swabbing with suprarenal solutions may be effective. The styptic salts of iron are attended with too much danger to justify their use except as a last resort.

The Credé method of expulsion of the placenta will usually stop the flow by removing the obstacle, and will stimulate the uterus to contract. Failing thus to remove the placenta, the hand should be introduced into the uterus and the contents removed.

The placenta having been born, if the hemorrhage continues and the uterus is soft and flabby, contraction of that organ is the end aimed at. This is generally accomplished with the hot (110 to 115 F.) intrauterine douche. Before giving this, the physician should make sure that the entire contents of the uterus have been removed, and that organ should be massaged while the douche is in process. For the douche, use hot sterile water or physiologic (about a teaspoonful of salt to a pint of water) saline solution. Solutions of stronger drugs or preparations are apparently of no additional benefit.

Contractions may be started sometimes by the introduction of a piece of ice into the uterus, a pledget of cotton wet in vinegar or a 2 per cent. acetic acid solution.

If the hemorrhage still continues, Bryan, Philadelphia, advises the "bimanual manipulation," usually accomplished "by passing two fingers of the right hand high up into the vagina, along the posterior wall, pressing the lower segment and cervix forward toward the symphysis pubis, at the same time passing the fingers of the left hand deep in between the umbilicus and the uterus so that the hand on the outside, the fundus resting in the palm of his hand, may be pushed downward and forward against the pubes, thus forming a sort of temporary ante flexion."

When these methods fail, the next thing to do is to pack the uterus. The volsella forceps are preferable for this, as there is little danger that the cervix will contract so as not to admit them, and the ordinary uterine dressing forceps are sharp enough at their points to admit an element of danger from the possibility of

their being pushed through the fundus. The packing may remain in the uterus for from six to twenty-four hours, and when it is removed another packing should be ready to replace it, if necessary.

### INFANT FEEDING

In this age of bottle-fed infants, milk foods, substitute foods, pasteurized milk, and modified milk, it may be well to ponder some on the facts presented in a paper by Dr. Joseph E. Winters, of New York, Professor of Diseases of Children at the Cornell University Medical College. It may be well to present his findings in the form of aphorisms.

1. Infant mortality has only lately decreased, while the mortality of older individuals has been continuously decreasing.

2. A breast-fed child in the worst surroundings has an immunity from disease never found under any condition of substitute feeding.

3. The mother's milk is very rich in fat, containing 5 per cent. (together with 7 per cent. of milk sugar, and 1.25 per cent. of proteid) and, other things being equal, the fatter the child, the healthier it is.

### FAT CONTENT

4. The extra amount of fat which the child receives from its mother's milk over and above that from artificially prepared foods is absolutely necessary for the maintenance of its requisite heat, and when it is remembered that heat is largely lost by radiation and evaporation from the surface of the body, and the child having relatively three times as much surface for radiation and evaporation as the adult, the importance of maintaining the fat content of its food is at once seen.

5. The extra amount of fat is also needed for the child's nutrition on account of the rapid growth of brain, nerves, and bone marrow, all of which tissues contain large amounts of fat.

6. Separator (or centrifugal) cream is prepared from whole milk by rapid revolutions of the separator, and is consequently lower than gravity cream in all of its constituents except fat, and would be more correctly named if called centrifugal or separator butter fats in-

stead of cream. Also, by the excessive pressure the fat globules are no longer free, but are so crushed together that when added to modified milk they form masses of fat that can not be well digested by the child. Such conglomerate fat which must reach the intestine for digestion, "does not readily pass through the narrow pylorus of the infant. Such fat is, then, as indigestible as cheese."

7. "Centrifugal cream is almost proteid-free and nearly destitute of growth constituents, hence the only food value it can have is as an addition of fat to other milk."

8. The upper half-ounce of *gravity* cream contains 3 per cent. of proteid, and gives fat globules so loosely coherent as to be readily emulsified, and hence it does not form a tough curd in the child's stomach as does separator cream. Therefore, the upper half ounce of gravity cream from milk of cows "other than Jerseys and Guernseys," whose milk is too rich in fat, makes the best basis for an artificial food for the infant.

#### GROWTH AND PROTEID PERCENTAGE

9. "There is a definite and unfailing relationship between growth and the percentage of proteid in milk. The calf doubles its weight in forty-seven days with 4 per cent. of proteid in milk; the lamb in ten days with 7 per cent.; the puppy in eight days with 8.25 per cent.; the kitten in five days with 9.33 per cent.; while a child grows most rapidly during its first week of life, at about which period the secretion of the mother's breasts contains 8.5 per cent. of albumin. The high protein, non-coagulable, absorbable without digestive effort of mother's milk is impossible of duplication."

10. "The mortality of infants under one year is so great that an equally high death rate is not again recorded until the age of eighty years, and 75 per cent. of these deaths occur in the first six months. Such a mortality would not occur were all infants breast-fed, and maternal nursing even shows a lower mortality than with wet nursing, showing that the mother's milk is peculiarly adapted to her own infant."

11. "Calcium phosphate, magnesia, sodium and potassium chlorid in greater quantity in colostrum than

in milk of later period is peculiarly adapted for cleansing the child's intestines of the perilous meconium."

12. As the child's stomach rapidly enlarges and the pylorus increases in size, after from six weeks to two months, the child can better digest properly modified cows' milk.

13. At the end of this period, six weeks to two months, it is possible to modify cows' milk to simulate mother's milk, but before this six weeks' period it is almost impossible to produce a food that can at all equal, in its gradual modification, Nature's own method of feeding and nourishing the young infant.

14. While it is necessary for the welfare of the infant that it receive its mother's milk, it is also for the best health of the mother that the child should nurse. In about six weeks after delivery the large, heavy uterus should have involuted to the normal size of the non-pregnant uterus. A powerful aid to such proper involution is the reflex contraction which takes place in the uterus when the infant grasps the nipple. If the uterus receives this reflex stimulation to contraction from eight to ten times every twenty-four hours, and such reflex stimulation lasts from fifteen to twenty minutes, and such functions and stimulations are normal, it may be easily seen how one set of generative organs may not return to perfect health if the other set is not properly utilized.

15. If it is thoroughly explained to the mother that during her normal period of rest after confinement, viz., six weeks, that the child *extra utero* is just as much a part of her as the child *intra utero*, and that after these six weeks, if it seems advisable, the child may be weaned and artificial food given, she will certainly co-operate for her own and the child's health, and will nurse her own baby.

16. "The milk of every healthy mother agrees with her child." The child should nurse slowly if it will, and should obtain its food with some effort on its own part, as vigorous nursing stimulates the child's secretions and hence is much better than for the milk to flow readily, as from a bottle.



## WATER FOR INFANTS

17. "Never give water from a bottle to a new-born child—refusal to nurse is certain to ensue. Water may be given from a spoon twice the first day. It must not be given the second. Much water, even from a spoon, prevents vigorous nursing."

18. The green stools due to the meconium are often incorrectly believed to be because the milk disagrees, and calomel or castor oil are needlessly given, or the child is needlessly weaned. Also, "officious discussions, before the mother, that her milk probably disagrees with her own child on account of some apparent colic, sleeplessness, or a little vomiting, or a little mucus in the stools, has caused the loss of many lives by making the inexperienced mother needlessly wean her child."

19. After the child has nursed to its fill, it should be placed in a quiet, darkened room, where it may uninterruptedly sleep until it is again ready to nurse. Too much handling of the young infant interferes with its digestion and its nutrition.

20. Winters believes that, as the maximum gain in breast-fed children is during the second month, and, as (he thinks) the proteid and minerals in the mother's milk are inadequate for the proper growth of the child after the second month, that Nature did not intend the prolongation of lactation to eight or ten months.

21. After the first month Winters would give the breast-fed child two bottles of modified cows' milk every twenty-four hours, at such times as to allow the mother uninterrupted rest at night, and an occasional freedom during the day. Such a method makes weaning easy, at any period.

## PASTEURIZATION

22. "Pasteurization dissolves the organic union of mineral and proteid in milk, and thus fails to present the baby with normally constituted organic food. It is a recourse to palm on a credulous public milk unfit for food."

23. "An infant is not endowed with the ability to digest vegetable foods; hence foods from barley or any other grain are not adapted to the infant's needs. Of 1,000 children fed on various infant foods, 780 more died in the first year than of 1,000 breast-fed children.

Infant physiology, physiologic chemistry, and experimentation demonstrate that the giving of any food other than modified raw milk to an infant under six months is perfidious. In Germany, when an infant under one year dies the law requires the mode of feeding to be stated on the certificate of death. Barley, dextrinized cereal, malt soup, all adventitious and foreign accessions to modified milk, enhance mortality."

"When the order of nature changes; when the functions of heat, respiration and nervous energy in the new-born can be accomplished without fat as a source of heat; when the blood-forming, heat-producing and force-producing structures contain no fat; when women's breasts secrete barley gruel, dextrinized cereal, malt soup, wheat flour, sour milk, and fat-free milk, these anomalous and strange feeding whims will be founded on some bottom of reason."

# DIET

---

## GRUELS AND STARCHY DRINKS

The food value of a starchy drink during certain illnesses is considerable; also, many thin, cereal liquids are very soothing to patients with gastrointestinal disturbances. With seriously ill patients a happy arrangement of a mixed diet of some milk, some beef juice and some thin, digestible, well-cooked starch makes the most appropriate food.

The following suggestions of the way such nutritious drinks should be prepared are from "Practical Dietetics," by Alida F. Pattee. For convenience an approximate estimate of the calorific value has been added to each receipt.

### FLOUR GRUEL

|               |                             |
|---------------|-----------------------------|
| Milk .....    | 1 cup.                      |
| Flour .....   | $\frac{1}{2}$ tablespoonful |
| Salt .....    | a speck                     |
| Raisins ..... | 1 dozen                     |

"Scald the milk, mix the flour with a little cold milk and stir into the scalding milk. Cook in a double boiler for one-half hour or on back of stove in a saucepan. Stone and quarter the raisins, then add water enough to cover; cook slowly until the water has all boiled away; add to gruel just before serving, or eat with the raisins as desired. If there is much diarrhea the raisins should be left out."

Calorific value approximately 150 cal.

### BARLEY GRUEL

|                     |                  |
|---------------------|------------------|
| Barley flour .....  | 2 tablespoonfuls |
| Milk, scalded ..... | 1 quart          |
| Salt.               |                  |

"Blend the barley flour with a little cold milk and stir into the scalding milk. Cook in a double boiler two hours, salt to taste, and add sugar if desired; strain."

Calorific value approximately 650 cal.

## BARLEY GRUEL WITH BROTH

|                    |                  |
|--------------------|------------------|
| Beef broth .....   | 2 cups           |
| Barley flour ..... | 2 tablespoonfuls |
| Cold water .....   | 2 tablespoonfuls |
| Salt .....         | 1 saltspoonful   |

"Mix barley flour and salt with the cold water to form a smooth paste. Add gradually to the boiling stock and boil one-half hour. Strain and serve very hot.

## EGG AND SHERRY GRUEL

|                        |                 |
|------------------------|-----------------|
| Egg .....              | 1               |
| Sherry .....           | 1 wineglassful  |
| Lemon juice .....      | 1 teaspoonful   |
| Sugar .....            | 1 tablespoonful |
| Grated nutmeg.         |                 |
| Smooth hot gruel ..... | 1 cup           |

"Beat the egg, add wine, lemon juice and nutmeg, and pour on the hot gruel."

Calorific value approximately 250 cal.

## ARROWROOT GRUEL

|   |                  |
|---|------------------|
| Arrowroot .....                                 | 2 teaspoonfuls   |
| Cold water .....                                | 2 tablespoonfuls |
| Boiling water or milk.....                      | 1 cup            |
| Salt.   |                  |
| Sugar, lemon juice, wine or brandy as required. |                  |

"Blend the arrowroot and cold water to a smooth paste, add boiling water or milk and cook in a double boiler for two hours. Add salt, strain, and serve hot."

Both the barley and arrowroot may be administered in diarrhea.

Calorific value approximately 150 cal.

## INDIAN MEAL GRUEL

|                     |                             |
|---------------------|-----------------------------|
| Indian meal .....   | 1 tablespoonful             |
| Flour .....         | $\frac{1}{2}$ tablespoonful |
| Salt .....          | $\frac{1}{4}$ teaspoonful   |
| Cold water .....    | 2 tablespoonfuls            |
| Boiling water ..... | $1\frac{1}{2}$ cups         |
| Milk or cream.      |                             |

"Blend the meal, flour and salt with the cold water to make a smooth paste and stir into the boiling water. Boil on back of stove one and one-half hours, dilute with milk or cream, strain."

Calorific value approximately 250 cal.

## RICE GRUEL.

|                     |                  |
|---------------------|------------------|
| Rice flour .....    | 1 tablespoonful  |
| Cold water .....    | 2 tablespoonfuls |
| Boiling water ..... | 1 quart          |
| Salt.               |                  |

"Mix the rice flour with a little cold water to form a smooth paste, add the boiling water, and cook in a double boiler until transparent and thoroughly cooked. Add salt to taste, sweeten, and add milk if desired; strain."

Calorific value approximately 40 cal.

## OATMEAL GRUEL.

|                     |                           |
|---------------------|---------------------------|
| Coarse meal .....   | $\frac{1}{4}$ cup         |
| Salt .....          | $\frac{1}{2}$ teaspoonful |
| Boiling water ..... | $1\frac{1}{2}$ cups       |
| Milk or cream.      |                           |

"Add oatmeal and salt to the boiling water, cook four or five hours in a double boiler, adding more water if necessary. Strain, and dilute with hot milk to make it of the right consistency. Re-heat and serve. Sugar and a little port wine may be added if desired."

Calorific value approximately 150 cal. a cup.

## FARINA GRUEL.

|                     |                 |
|---------------------|-----------------|
| Farina .....        | 1 tablespoonful |
| Cold water .....    | 1 tablespoonful |
| Boiling water ..... | 1 cup           |
| Scalded milk .....  | 1 cup           |
| Salt.               |                 |

"Mix the farina with the cold water, add to the boiling water and boil thirty minutes. Add the scalding milk, taste and season properly. A little sugar may be added if desired, or an egg may be beaten and the gruel added to it."

Calorific value approximately 150 cal.

## BROWNE FLOUR GRUEL.

"Tie one-fourth pound of wheat flour into a thick cloth and boil it in a quart of water for three hours. Remove the cloth and expose the flour to the air, or heat it until it is hard. Grate from it when wanted a tablespoonful, put into a half pint of new milk, and stir over the fire until it comes to a boil, add a pinch of salt and a tablespoonful of cold water, and serve. This gruel is excellent for children with simple diarrhea."



## BARLEY WATER

Pearl barley,  $1\frac{1}{2}$  tablespoonfuls.

Cold water, 1 quart.

Salt, enough.

“Wash the barley, add cold water, and let it soak several hours; drain and add the fresh cold water, boiling gently over direct heat for two hours, down to one pint, adding water from time to time; salt to taste, and strain through muslin. Cream or milk may be added, or lemon juice and sugar.” This makes a demulcent drink, slightly constipating.

## RICE WATER

Rice, 2 tablespoonfuls.

Cold water, 1 pint.

Boiling water or hot milk, enough.

Salt, enough.

“The carefully washed and cleaned rice should be added to the cold water and cooked an hour, or until the rice is tender. Strain, and dilute with the boiling water or hot milk to the desired consistency, and season with salt.” Sugar or cinnamon may be added if desired or advisable.

## OATMEAL WATER

Oatmeal, 1 tablespoonful.

Cold water, 1 tablespoonful.

Salt, a little.

Boiling water, 1 quart.

“Mix the oatmeal and cold water, add the salt, and stir into the boiling water. Boil three hours, adding water as it boils away. Strain through a fine sieve or cheesecloth, season, and serve cold.”

## TOAST WATER

Stale bread, toasted, 1 cup.

Boiling water, 1 cup.

Salt, enough.

“Dry in an oven until crisp and brown, thin, inch squares of the bread. Take a cupful of this toast broken into crumbs, add water, and let it stand one hour. Strain through cheesecloth, season, and serve hot or cold.” If advisable, milk or cream and sugar may be added.

## ALBUMINOUS DRINKS

## EGG BROTH

Yolk of one egg.

Sugar, a tablespoonful.

Salt, a speck.

Hot milk, one cup.

"After beating the egg, add the sugar and salt, and then pour on the hot milk. If desired this may be flavored with brandy or wine. Calorific value approximately 230 cal.

## EGGNOG

Egg, one.

Salt, a speck.

Sugar, a tablespoonful.

Milk, two-thirds of a cup.

Sherry wine, one and one-half tablespoonfuls, or

Brandy, one tablespoonful or less.

"The beaten egg, with the added sugar and salt, should be chilled and the milk chilled before the whole is mixed with the liquor. A little nutmeg may be added if desired." Calorific value approximately 220 cal.

## JUNKET EGGNOG

Egg, one.

Milk, one cup.

Sugar, one tablespoonful.

Rum, brandy or wine, two teaspoonfuls.

Hansen's junket tablet, one-fourth.

"Beat the white and yolk of the egg separately very light, then blend the two and add the sugar dissolved in the rum. Heat the milk lukewarm, stir into the egg mixture and add quickly the tablet which has been dissolved in cold water. Pour into small warm glasses and sprinkle grated nutmeg over the top. Stand in a warm room undisturbed until firm, and then put on ice to cool. This can be retained by the most delicate stomach." Calorific value approximately 250 cal.

## BEEF EGGNOG

Egg, one.

Salt, a speck.

Sugar, a tablespoonful.

Hot beef broth, one-half cup.

Brandy, a tablespoonful.

"Beat the egg slightly, add the salt and sugar, then gradually add the hot broth, then the brandy, and

strain. The sugar and brandy may be omitted, if preferred." Calorific value approximately 150 cal.

## EGG AND BRANDY

Eggs, three.

Cold water, four tablespoonfuls.

Nutmeg, a little.

Brandy, four tablespoonfuls.

Sugar, enough.

"Beat the eggs, add the cold water and brandy, and sweeten to the taste. Administer a tablespoonful at a time." Calorific value approximately 300 cal.

## ALBUMINIZED MILK

Milk, one cup.

White of one egg.

Salt.

Flavoring.

"Place the milk and egg in a covered glass fruit jar, shake until thoroughly blended, salt and flavor as desired. Strain and serve immediately." Calorific value approximately 150 cal.

## ALBUMINIZED WATER

Water, one cup (cold water boiled, and then cooled).

White of one egg.

Lemon juice.

Sugar to taste.

"Put all the ingredients into a covered glass fruit jar and shake until thoroughly blended, then strain and serve immediately." Calorific value approximately 75 cal.

# PHYSICAL REMEDIES

---

## THE OIL RUB

The almost forgotten advantages of anointing the body with oil is brought to our notice by the *Dietetic and Hygienic Gazette*, September, 1908. The practice of anointing the body with oil goes well back into ancient history, and is still practiced by the natives of Africa, Samoa and the South Sea Islands.

The body should first be bathed with warm or tepid water, dried, and the oil then applied; it should not be applied to the dry, unwashed skin. The oil should, of course, be pure and clean, should be well rubbed into the skin, and any surplus should be removed with a soft towel. Some knowledge of massage is necessary to a successful oil rub, and the rubbing should not be sufficiently vigorous to cause perspiration. The best oil for this purpose is pure olive oil, cocoanut oil or palm oil; cottonseed oil may be used. Animal fats do not make an ideal oil rub.

In temperate climates it is probable that the main advantages from such anointing is due to the massage; in other words, the circulation of the skin is improved, the muscles are cleansed of excrementitious products by such debris being forced into the lymph circulation, and the blood flow through the muscles is improved. The oil rub has also a good therapeutic use when the skin of the patient is always dry and scaly. Such people probably do not have a normal secretion from the thyroid gland, but whatever internal medication is deemed advisable, the oil rub will add to the improvement of the skin condition.

In tropical countries the oiled skin radiates heat more rapidly than the dry skin when little or no clothing is worn. On the other hand, in cold countries where much clothing is needed the oiled surface of the body keeps the body warmer. It also seems to be a fact that after

hot bathing a patient who catches cold readily has less liability to chilling if an oil rub is given.

Locally, oil rubbing may be used, after hot bathing, for cold feet or cold legs, and the feet of such patients will remain warm longer than without it.

Although it has been stated that oil may be rubbed into the body so as to increase nutrition and that weakly patients, especially infants, will improve, it is still a question if it is not the general toning up of the circulation, the equalization of the circulation, and the prevention of flabbiness of muscles, in other words, the effects of the massage, that are the real cause of the improvement in the general condition.

---

### THE SCOTCH RUB

The *Dietetic and Hygienic Gazette*, September, 1908, calls attention to this method of obtaining a better circulation in the skin as described by the *British Journal of Nursing*. It is applicable to patients to whom a cold water rub is unpleasant, and consists in washing a part of the body with hot water, not too hot, and then rubbing with cold water, with a towel. "If under such applications the skin slowly reddens or stays pale and the skin muscles are contracted, it means an abnormally high excitability of vessel innervation." This condition is found in anemia and in some feverish conditions. "A livid redness of the rubbed area means circulatory insufficiency," while a slow rewarming or continued coolness of the treated area in high fevers "is suggestive of a pending circulatory collapse." The advantages are that the friction is a mild stimulant and causes the rubbed area to radiate heat normally, while it also increases evaporation.

The advantage is that this method is pleasanter to most patients than the cold sponging done to reduce the temperature, and while not tending to lower temperature immediately as well as does the typical cold sponging, it does tend to keep the surface of the body in a healthy condition and causes the skin to give off heat rather than to retain it.



**MASSAGE CREAM**

Physicians are frequently asked to prescribe massage or face creams, and the following forms may be used:

**GREASY CREAM**

|                     |          |
|---------------------|----------|
| Cacao butter .....  | 2 ounces |
| Lanolin .....       | 2 ounces |
| Hard paraffin ..... | 4 ounces |
| Soft paraffin ..... | 8 ounces |
| Rose water .....    | 4 ounces |

"Melt together the fats, and when the mixture begins to congeal, beat in the rose water with an eggbeater, continuing the beating until the cream has set."

**NON-GREASY CREAM**

|                           |           |
|---------------------------|-----------|
| Casein, moist .....       | 1 pound   |
| Glycerin .....            | 3 ounces  |
| Oil of rose geranium..... | 30 minims |
| Boric acid .....          | 90 grains |
| Eosin .....               | enough    |

**BATH POWDER**

|                            |           |
|----------------------------|-----------|
| Sodium bicarbonate .....   | 8 ounces  |
| Tartaric acid .....        | 6 ounces  |
| Rice flour .....           | 16 ounces |
| Oil of rose geranium ..... | enough    |

**WATER AS A DIURETIC**

Dr. T. C. Holloway, in the *Kentucky Medical Journal*, April, 1908, calls attention to the neglect of the proper drinking of water, both in acute and chronic conditions.

He points out that as a routine examination of patients whose condition we do not thoroughly understand, the amount of urine passed in twenty-four hours and the specific gravity of the twenty-four hours' output should be known, as well as the less frequently omitted examination for albumin and sugar. If the urine were more frequently examined during simple acute processes the profession would be surprised at the frequency with which disturbances of the kidney functions are found. All too frequently, when an insufficient amount of urine is passed, more or less irritant diuretics are given when simply an increased amount of water is needed.

A caution should be noted here, that with real nephritis, or with an insufficiency of the heart, or a failure

of the circulation, or when there is edema, large amounts of water should not be drunk. On the other hand, in conditions in which water should be administered both as a diuretic and to dilute all the excretions, it is not sufficient for the physician to direct a patient to "drink plenty of water," but he should specify the amount of water he wishes taken during the twenty-four hours.

Especially is it necessary, during acute infective processes in children, to urge their drinking plenty of water, perhaps as lemonade, orangeade, or barley water; but water in some form should be freely given.

Holloway urges the necessity of having pregnant women drink water in larger amount than they generally do, as tending to prevent the toxemias that so readily occur from the retained products of metabolism.

Also in the preparation of patients for operation, the free administration of water during the forty-eight hours preceding the operation is a great help in clearing the body of refuse products of nitrogenous metabolism, and puts the patient in better condition to withstand the anesthetic and the shock of the operation.

---

### WATER IN CHILDHOOD

Dr. Max Barbour, Philadelphia, in the *New York Medical Journal*, Feb. 8, 1908, calls attention to the fact that ordinarily not enough water is given to babies and young children. While a young child cannot ask for water, and does not often know what it wants, according to Holt and Jacobi, it requires approximately to its weight, from six to eight times as much water as the adult. Hence, the physiologic reasons for giving children very diluted food, as large amounts of water are needed for the child's metabolism.

Barbour says that he has frequently allayed vomiting in children with no other medicament than the administration of a few teaspoonfuls of water, and he thinks a glass of water during the twenty-four hours is not too much for an infant several months old. Of course, this amount should vary according to the season and the condition of the child, the child naturally requiring more in hot weather and during any feverish process.

He characterizes as pernicious the habit of offering a child the breast or food whenever it cries. What it really needs is water. It is often thirsty, not hungry.

He emphasizes the fact, often forgotten, that when there is diarrhea with watery stools, the child needs water, and many times plenty of water will prevent the development of serious symptoms. If the urine is scanty and high colored, it should also quickly be noted and the child should receive more water. When the child cries when it urinates, due to concentrated, irritating urine; also when it is hoarse or has a cough, it should receive plenty of water, in the first instance to dilute the urine and in the second instance to render the mucous secretion more liquid.

Barbour believes that if babies received more water they would require less medicine.

### CARBONIC ACID.

Dr. Thomas E. Satterthwaite, New York (post-graduate January, 1908) discusses the medical uses of carbonic acid gas. He describes the advantages of the carbonic acid baths, especially as used for disturbed conditions of the circulation. These baths, the so-called Nauheim baths, contain carbonic acid, "which decreases the pulse rate and at the same time regulates the circulation in gout and rheumatism by dilating the capillaries and smaller vessels and by directly and indirectly stimulating the nervous centers, while the peripheral nerves are soothed." This brings more blood to the surface, and, causing equalization of the circulation, tends to dissipate internal congestions and local congestions and would tend to improve general metabolism. The indication for such baths, then, would be in circulatory insufficiency as in chronic heart diseases, in neuroses, in neurasthenics, in gouty conditions and joint disturbances and in the disturbed metabolism of lithemia or so-called uric acid conditions.

Satterthwaite states that Franzensbad, in Bohemia, is visited by female patients who are sent there for the carbonated bath treatment of inflammations of the pelvic organs. It would seem that improvement of such conditions would be from the general improvement of the health and nutrition, such improvement tending, of

course, to lessen a chronic inflammation or induration. "In neurotic patients who have been previously quieted only by drugs these carbonated baths, kept up for hours at a time under the care of a proper attendant, have given great relief without any other form of treatment." The advantages of such treatment of nervously excited patients, as in mania, have been demonstrated at the Manhattan State Hospital for the Insane on Ward's Island, New York.

One of the oldest methods of using carbonic acid gas is the dry plan, and this method has been used in Franzensbad, in Bohemia, where the gas is collected in rooms in which the patients sit in chairs and take the baths without removing their clothing. The gas is, of course, heavier than air, and hence in small amount rises but a few feet from the floor. Patients subjected to such a carbonic acid foot bath soon feel "a tingling in the feet and legs up to the level of the gas and subsequently an agreeable sensation of warmth, due to the dilatation of the capillaries." The water carbonic acid bath, however, adds to the advantage of the warm water, the action of sodium chlorid and calcium chlorid. The action of these slight local irritants intensifies the dilating action of the surface vessels, and there follows such baths a longer continued lowering of the general blood pressure and therefore a greater equalization of the circulation.

Carbonic acid baths may be made at home. The ingredients for such baths are prepared by pharmaceutical firms and may be obtained from most drug stores. The solutions, powders, or tablets, depending on the mixture used, should be placed on a rubber foot pad in the bottom of the bath. These ingredients generally consist of sodium bicarbonate, sodium chlorid and calcium chlorid. Sometimes acid sulphate of sodium tablets with sodium bicarbonate are used for the production of the effervescence. Full instructions come with each package, and generally enough material for twelve baths. A single such bath will cost about 75 cents.

# SYSTEMIC REMEDIES

---

## CALCIUM SALTS

Dr. Arthur P. Luff, in the *British Medical Journal*, Jan. 30, 1909, considers Sir Almroth Wright's suggestion, that a deficient blood coagulability may not lead to actual hemorrhages, but to "serous hemorrhages" or exudates, to be founded on fact. Examples of such serous transudates "are urticaria, chillblains, edema of the feet and hands not due to circulatory or kidney lesions and some forms of headache." All of these conditions may be improved by the administration of a calcium salt.

The lymphatic type of headache due to diminished coagulability of the blood "occurs more frequently in women than in men, and is manifested by a dull, heavy ache in the frontal region, and sometimes by a throbbing in the frontal and temporal regions." This kind of headache is most frequently present on the patient's awakening in the morning and diminishes or disappears after the patient has been up and about a shorter or longer time. Such patients are likely to show mental and physical lassitude, and a tendency during the day to slight edemas in pendent portions of the body.

The administration of calcium salts to patients who suffer from this kind of headache is generally followed by amelioration, while it has been shown that the administration of potassium citrate to such patients, by diminishing the coagulability of the blood, increases the headache.

Patients who are subject to chilblains and more or less constantly have cold hands and feet, with perhaps some slight edema, Luff shows are benefited by calcium. The same he has found true of patients who suffer with boils, urticaria and flushing of the face, provided that such patients concomitantly have cold hands and feet, which he evidently considers an indication for the calcium treatment.



He has had some success in the treatment of hemoglobinuria, and has caused some benefit in aneurism by the administration of calcium.

He has also benefited patients with edema of the feet which was not of circulatory or renal origin, and this after various other treatments had failed.

Luff always uses calcium lactate, and says it is important that it should be fresh, as it decomposes after long keeping. "The indication of its good condition is that it should form a clear, or nearly clear, solution in water. A definite white precipitate in its solution is an indication that the salt has undergone some change and should not be used." He administers it as follows:

| R.                         | gm. or c.c. |         |
|----------------------------|-------------|---------|
| Calcii lactatis .....      | 10          | 3iiss   |
| Tincturæ capsici .....     | 30          | or m. ▼ |
| Aquæ chloroformi, ad ..... | 150         | fl. 3v  |

M. et Sig.: A tablespoonful in water, three times a day, one hour before meals.

Luff considers it important to give the medicine about an hour before meals, "as this allows absorption of the salt to take place prior to the introduction of food into the stomach, and thus prevents the precipitation of the calcium by the phosphates and possibly other constituents of the food." He gives the calcium lactate continuously for six weeks. If constipation is caused by it, he uses senna as a laxative, and thinks saline purgatives should not be administered on account of "their precipitant action on calcium salts." Occasionally some months after the cessation of the treatment slight relapses occur, but these are quickly overcome by the re-administration of calcium lactate for a period of one or two weeks.

Luff reports the results of giving the above calcium treatment to 121 patients, and without seeing any undesired symptoms except in three instances. One of these patients showed a slight venous thrombosis in the right calf; the second a slight numbness of the arms and legs, associated with tingling, and the third complained of noises in the ear and deafness. In each of these instances the unpleasant symptoms rapidly subsided after the administration of the calcium salts ceased.

## ARSENIC

Arsenic as a medicament has done more harm than it has ever done good, because the symptoms of its bad action are many times hidden and slow in development, hence have not been noted. The acute signs of over-dosage with arsenic, as gastrointestinal disturbances, epigastric pain, puffing under the eyes, and reddened eyelids, are well understood, but late symptoms of over-use of arsenic as disturbances of the kidneys and a breaking down of the red blood corpuscles (although at first and in small doses, so-called tonic, arsenic will increase the number of red cells) are not noted.

The puffing under the eyes in the morning in patients taking arsenic is doubtless due to irritation of the kidneys, and careful examinations of the urine in patients taking large doses of arsenic or in whom small doses have been long repeated, will frequently show albumin, often blood, and finally even severe kidney disturbances. Large doses of arsenic given hypodermatically for anemia or leukemia can not only cause the above harm, but can cause multiple neuritis.

The conclusions to be drawn from the above are: If arsenic is given, it should be given in small doses only, and during its administration the urine should be carefully watched. When it is deemed best gradually to increase the dose to the point of physiologic symptoms, it should be given in solution, and best in the liquor potassii arsenitis, or Fowler's solution, and the dose should then be increased no faster than one drop a day, not one drop a dose. When a small dose of arsenic is desired for its stimulant and probably tonic action, the trioxid of arsenic may be given in soluble tablet, or in pill or capsule, after meals, combined with quinin, iron or strychnin, any one, or all, if desired.

It is a mistake to believe that chorea, chlorosis or anemia can not be well treated without arsenic, and if careful discriminating observations are made it will be found that arsenic as a tonic may be omitted without loss in any tonic treatment.

It has long been known that while arsenic is often used in anemias it does not *per se* increase the hemoglobin or the output of red blood corpuscles, although it has many times caused clinical improvement in various blood diseases, notably in pernicious anemia. At times

it seems to increase the number of white blood corpuscles, and at other times, in leukemia, has been shown to diminish them. The administration of arsenic has not seemed to increase the production of red blood corpuscles in normal animals.

While iron is the most satisfactory treatment in chlorosis, other drugs or salts are often as successful in the treatment of this condition, notably salines, bowel antiseptics, thyroid and arsenic. The disturbance in chlorosis seems to be due to a disturbed physiologic chemistry of the iron from the food to the red blood corpuscles, and other salts may sometimes correct this chemical error as well as an iron salt.

Arsenic has been supposed to act as a stimulant to the bone marrow, and hence perhaps in certain conditions increases the red blood corpuscle output. It also seems to be a stimulant to the thyroid, and that gland probably takes some part in blood formation.

Dr. James A. Gunn, Edinburgh, Scotland, in the *British Medical Journal*, July 18, 1908, presents his results from experimentation with this drug.

He suggests that in studying pernicious anemia and the etiology of this condition we look to a weakened condition of the stroma of the red corpuscles as a probable cause of their untimely destruction rather than to the organs that produce the red corpuscles or to the contents of the red corpuscles. The hemoglobin content of the red corpuscles in pernicious anemia seems to be perfect or even increased in amount. The stroma of the cells contains considerable lecithin and cholesterolin, and if not enough of these substances are in the system the stroma can not be well formed.

Lecithin also seems to be a stimulant to the red bone marrow, and in various conditions of anemia the feeding of red bone marrow preparations or the administration of lecithin preparations has often improved the anemia.

Anything that could make the stroma of the red corpuscles less liable to destruction would probably improve the condition of pernicious anemia. Gunn finds by experiments that very dilute solutions, even 1 to 400,000 parts of arsenic (Arseni trioxidum) mixed with blood, will prevent the destruction of the red cor-

puscles when treated with distilled water. Distilled water causes destruction of the red cells when added to blood. If this blood was previously treated with arsenic solution, the destruction becomes less and less rapid, depending on the strength of the arsenic solution; the greater the strength, up to 1 to 50,000 dilution, the greater the ability of the stroma of the cells to withstand the destructive action of water. Gunn finds by estimation that it is possible with ordinary good-sized doses of arsenic to cause a solution of arsenic in the blood equal to 1 part to 400,000. He thinks that this is the reason of the prevention of red corpuscle destruction that is the cause sometimes of the improvement in pernicious anemia from the arsenic.

He also thinks, as arsenic in the blood has not been proved to act on malarial organisms, that its value in malarial fevers is due to preventing the parasites from entering the red corpuscles and destroying them.

---

### SULPHUR

Sulphur is an element and is found as such in volcanic districts, and elsewhere in combination (sulphids and sulphates).

If it remains long in contact with the skin, or is rubbed into the skin either in a suspension or in an ointment, it is stimulant and later irritant to the skin, and may even produce an inflammation, a dermatitis. Its stimulant action is often utilized to increase the exfoliation of the epidermis. It is mildly antiseptic and is a parasiticide. It probably has little action, other than mechanical, in the stomach; i. e., at first, in the dry powder, it would be slightly irritant, but if the stomach contains food and liquid, it is practically inert. In the alkaline contents of the intestine a small amount is absorbed, but most of it is converted into sulphids and sulphates with the formation of hydrogen sulphid gas. This gas is readily taken up by the circulation, and is excreted by the lungs and skin, imparting its characteristic, disagreeable odor to the breath, and the emanations from the skin may tarnish silver articles worn by the patient. During its excretion by the skin sulphur is slightly stimulant, a fact which has caused it to be used internally in certain chronic skin diseases.

It has been thought that this hydrogen sulphid gas eliminated by the lungs would be antiseptic and inhibit the growth of germs in the lungs, such as the tubercle bacilli. Such a desirable action has not been proved. It has also been asserted that its presence in the blood would tend to inhibit the development of boils, carbuncles and acne. Any success from the administration of sulphur in these conditions is probably due not to specific action of the sulphur, but to its action, perhaps, as a bowel antiseptic, preventing the absorption of toxins from the intestines. For such slight systemic action it is not necessary for the dose of sulphur to be large.

When sulphur is administered in considerable amounts it increases peristalsis without causing pain, and by hastening the contents of the bowels toward the rectum causes the stools to be soft, and acts as a mild laxative. It is also probable that by its slight irritation it increases the secretion of the intestines. It is excreted normally with the feces, but somewhat by the skin and by the lungs, and also appears in small amount in the urine and milk.

Sulphur is not now much used as a laxative, largely on account of the amount that it is necessary to take, and the disagreeableness of taking it, also because it imparts a sulphurous odor to the breath, and sometimes the odor of sulphur to the perspiration. However, when there are hemorrhoids or a fissure at the anus, it is valuable, as the feces are softened by it and at the same time it does not make large watery stools as do some other laxatives. In these same conditions a sulphur suppository may be used at night and the stool in the morning is generally soft. This is the pleasantest way of using sulphur for this purpose.

The older clinicians attribute an alterative action to sulphur and believe that it is of advantage in causing excretion of products of metabolism that might be retained in the body to the detriment of the patient. With such an object sulphur has been much used in chronic rheumatisms, muscular pains or localized myalgias, neuralgias, and in gout. It has also been used in intestinal indigestions. For these purposes the dose may be small and repeated three times a day, or a larger dose once a day may be given for its combined alterative and laxative action. Although there has been a large psychical



element in the advantages derived from the internal administration of sulphur, there seems to be no doubt that it does prevent sluggishness of the bowels, and, therefore, prevents the production of toxins which, being absorbed, may cause pains in various parts of the body. Many drugs act similarly and better, but sulphur should, perhaps, be used more frequently than it now is for disturbances which are due to intestinal fermentation.

Its use has been advised on account of its germicidal action, in amebic dysentery and typhoid fever.

Sulphur is a specific in the treatment of scabies, and is also used in various other parasitic skin diseases, as *tenia versicolor* and *sycosis*. It also is used in acne and psoriasis, as it causes rapid exfoliation of the epidermis. In scabies it is often combined with the balsam of Peru, but many times balsam of Peru is used in its stead.

#### OFFICIAL PREPARATIONS

**SULPHUR SUBLIMATUM**, sublimed sulphur, or flowers of sulphur, or brimstone. This is a fine yellow powder, of sulphurous odor and a faintly acid taste, and is insoluble in water. This preparation of sulphur should not be used internally, as it may contain arsenic.

**SULPHUR LOTUM**, washed sulphur. This is prepared from the sublimed sulphur and is a fine yellow powder, but without odor or taste, and is also insoluble in water. This preparation is the best for internal use, and the laxative dose is 4 grams (60 grains).

**SULPHUR PRÆCIPITATUM**, milk of sulphur. This is also a fine, pale yellow powder, odorless and tasteless, and insoluble in water. This form of sulphur is especially valuable for external use when it is advisable to incorporate sulphur into an ointment. If the milk of sulphur is used internally, the dose is the same as the washed sulphur, viz., 4 grams (60 grains).

**PULVIS GLYCYRRHIZÆ COMPOSITUS**, compound licorice powder. This much used laxative contains 8 per cent. of washed sulphur, 18 per cent. of senna, glycyrrhiza, oil of fennel and sugar. The dose of this as a laxative is enough, viz., a teaspoonful or more.

**UNGUENTUM SULPHURIS**. This official sulphur ointment contains 15 per cent. of washed sulphur in benzoinated lard. It is used in the treatment of scabies and

other skin diseases, but should generally be diluted with lard or petrolatum, as it may produce considerable irritation of the skin.

## ADMINISTRATION

Sulphur may be administered as follows:

|                    |     |    |           |
|--------------------|-----|----|-----------|
| R.                 | gm. |    |           |
| Sulphuris loti     |     | or |           |
| Magnesii oxidi     | 10  |    | āā, 3iiss |
| M. et fac konseal. | 20. |    |           |

Sig.: One wafer, three times a day, after meals.

Or:

|                |     |    |     |
|----------------|-----|----|-----|
| R.             | gm. |    |     |
| Sulphuris loti | 15  | or | 3ss |
| Fac chartulas  | 5.  |    |     |

Sig.: One powder at bedtime.

[This may be administered, according to the old-fashioned method, in syrup or molasses, if desired.]

For scabies:

|                    |                              |    |        |
|--------------------|------------------------------|----|--------|
| R.                 | gm.                          |    |        |
| Unguenti sulphuris |                              | or |        |
| Petrolati          | 25                           |    | āā, 3i |
| M. et Sig.:        | Use externally, as directed. |    |        |

Or:

|                    |                              |    |       |
|--------------------|------------------------------|----|-------|
| R.                 | gm.                          |    |       |
| Balsami peruviani  | 20                           | or | 3v    |
| Unguenti sulphuris | 80                           |    | 3iiss |
| M. et Sig.:        | Use externally, as directed. |    |       |

These preparations should be thoroughly rubbed into the affected parts of the body, and after an hour the patient should take a bath. This treatment should be repeated on several days, and clean underclothing put on after each bath. It is well to repeat this treatment once a week for two or three weeks.

---

 ICHTHYOL

This is a non-official but much used preparation. It is a chemical combination of ammonium with a sulphonic acid obtained by dry distillation from the bituminous shale found in the Tyrol. This shale contains the remains of fossil fishes. The chemical name is ammonium ichthyosulphonate or ammonium sulphoichthyolate. It contains a great deal of sulphur, and the preparation was brought to the notice of the

profession by Unna, and was recommended for external use in skin diseases. It is a thick brown liquid which will mix with oils, fats, and with water.

It is a mild antiseptic and resorbent and when mixed with glycerin or olive oil in from 10 to 50 per cent. it has been applied to boils, indurations, inflamed joints, and to chemically inflamed parts. If frequently painted over a part it may cause blistering, but once or twice painting the skin will cause mild counterirritation. It has been recommended lately as a local application to stop pain in neuralgia. Combined with glycerin (10 per cent.) it makes a valuable vaginal tampon to reduce indurations and inflammations of the pelvis. It has been recommended for all kinds of skin diseases, both as an antiseptic and as a stimulant in chronic inflammations. In acute inflammatory conditions of the skin, as erysipelas and burns, weak solutions have been used with apparent advantage.

Ichthyol has had considerable use internally in pulmonary tuberculosis. Its principal value in these instances is, probably, as an intestinal antiseptic. The appetite often increases and there is less intestinal fermentation, it acting in this manner much like creasote. The best method of administering it for this purpose is with an equal part of water, and, beginning with one drop of this solution three times a day, gradually increase it to ten or more drops. Pills or tablets of ichthyol may also be obtained. The same precaution in using excessive doses should be taken as in using large doses of creasote, viz., that it soon may over-stimulate the gastrointestinal canal and a loss of appetite occur. It is also used internally for acne when this is due largely to intestinal fermentation. It may be ordered in pill form for this condition as follows:

|                            |     |             |
|----------------------------|-----|-------------|
| R.                         | gm. |             |
| Ammonii ichthyosulphonatis | 3   | or          |
| Pulveris glycyrrhizæ ..... | 3   | ℥℥, gr. xlv |
| M. et fac capsulas 20.     |     |             |

Sig.: One capsule three times a day, after meals.

## HYPNOTICS

---

It is impossible to enumerate the hypnotics in the order of their importance, as the importance of each individual drug varies with the condition to be combated; consequently the following are arranged alphabetically. The official hypnotic drugs are:

Bromids.  
Chloral.  
Chloralamid.  
Hyoscin.  
Morphin.

Paraldehyd.  
Sulphonethylmethanum  
(trional).  
Sulphonmethanum  
(sulphonal).

### BROMIDS

The bromids are used to produce sleep and to quiet the nervous system in conditions of irritability and excitation. Their action is largely as a sedative to the spinal cord, and also as a sedative to the cerebral cells. They are depressant to the circulation and, therefore, quiet circulatory excitement. Under their action the heart is slowed and the blood pressure falls; consequently in any condition of serious heart or circulatory weakness bromids are contraindicated. On the other hand, in any condition of inflammatory irritations of the cerebrospinal system they are indicated.

Their prolonged use tends to cerebral degeneration; consequently in old age and in mental debility or melancholia, or with symptoms of paresis bromids should not be used. Their prolonged use also tends to produce muscular weakness as well as weakened circulation, sluggish digestion, loss of appetite, and, generally, imperfect nutrition. Mental actions become sluggish, the eyes lose their luster, the face becomes pale, and actual anemia may develop. The perspiration is increased and may be irritating and sour. The whole condition is that of great depression. Such a chronic condition caused by the administration of bromids has been termed "bromism," but the term should be confined to the condition of chronic poisoning.

As the bromids are partially excreted through the skin, they often, directly or indirectly, irritate it, and acne or various papular or even wartlike eruptions can occur. The more carefully the body is cleansed with baths during prolonged administration of bromids the less likely is the skin to show eruption.

The over-action of a single dose of a bromid is shown by acute depression (lowered temperature, weak pulse, cold, clammy perspiration), impaired speech, tremor, profound sleep, perhaps stupor and, possibly, paralysis due to spinal depression.

The treatment of such a condition would be the application of dry heat, atropin and strychnin hypodermatically, black coffee by the mouth or rectum, and artificial respiration if it is needed.

Acute poisoning by bromids is rare, as a single dose to produce poisoning is rarely taken. The large doses often administered in epilepsy do not cause poisoning, as the patient has become tolerant to such dosage.

Bromids are indicated as follows:

1. To produce sleep.
2. In hysterical conditions without neurasthenia.
3. In acute cerebral excitement.
4. In inflammation of the meninges.
5. In convulsions caused by irritation of the brain or spinal cord (uremia, tetanus, hydrophobia).
6. In epilepsy.
7. As an antidote in strychnin or other convulsive poisoning.
8. To prevent cinchonism.

The only justification for administering bromids for a long period is in epilepsy, and in this disease it is a symptomatic treatment, though it seems at times to be curative. The size of the dose that should be used, the total amount and the length of time that the drug should be given must be decided by the symptoms of the disease and by the action of the bromids on the individual patient. However, by greatly diminishing the amount of sodium chlorid allowed in the food, it has been proved that therapeutic effects may be achieved from the bromids in epilepsy with much smaller doses than formerly were given.



As above stated, the eruptions on the skin caused by the continued use of bromids can be much abated or even abolished by the plentiful drinking of water and by daily hot baths. The coincident administration of arsenic is also often successful in preventing these eruptions.

There is no question that in hysterical conditions and conditions that simulate exophthalmic goiter (Graves' thyroid disease) bromids given for some time are of great value. They are also valuable in the nervousness and vasomotor disturbances of the menopause. The value of a bromid is probably not only in its actual sedative action on the nerve centers, but also by its quieting action on the thyroid gland, which in all of these conditions shows more or less hyperactivity. While in hysterical conditions bromids, even when administered for several weeks, may do nothing but good, it constantly must be borne in mind that their tendency is to cause debility and malnutrition that it may be difficult later to combat. The dose of a bromid to meet these indications is not large, from 0.50 gram ( $7\frac{1}{2}$  grains) to 1 gram (15 grains), two or three times a day.

As a hypnotic, the dose should be at least 2 grams (30 grains), given from one to two hours before bedtime. More may be given if deemed advisable. A smaller dose is rarely of any utility. As a hypnotic, bromids should not be given for any great length of time. If a hypnotic must be given for a considerable time, some substitute must be used, so that a habit for bromids may not be acquired.

The bromids are valuable in preventing the unpleasant symptoms from large doses of quinin. The coincident administration of three grains of a bromid for every one grain of quinin, *i. e.*, 1 gram (15 grains) of a bromid to 0.30 gram (5 grains) of quinin, will prevent cinchonism. Of course it would be inadvisable to give sufficient bromid to counteract the effect of the enormous doses of quinin given in pernicious malaria, but in ordinary intermittent fever during the period of the administration of fair doses of quinin to patients very susceptible to it, bromids are satisfactory.

The drugs whose physiologic actions are more or less similar to bromids are those that are termed depresso-motors. They are chloral, physostigma (calabar bean),

gelsemium and conium. Chloral, however, is the drug that acts most similarly to the bromids and may be substituted for them both as a hypnotic and as a cerebrospinal depressant.

The official bromids are:

Ammonii bromidum.

Calcii bromidum.

Lithii bromidum.

Potassii bromidum.

Sodii bromidum.

Strontii bromidum.

Zinci bromidum.

There is no reason for using the lithium, calcium or zinc bromid.

Strontium bromid is supposed to have a little less deleterious effect on the digestion than the other bromids have. The difference is so slight, however, that there is no good reason for using it.

The ammonium bromid is more disagreeable than the potassium or sodium bromid, and therefore is not often used. The pleasantest to take is the sodium salt.

The sodium and potassium bromids are the ones most frequently used, and of these the potassium salt seems slightly more hypnotic, but if long given is more depressant to the circulation, as potassium is more of a heart muscle depressant than is sodium. Consequently, for prolonged use the sodium bromid is best, except, perhaps, a combination of potassium and sodium bromids. It is thought by some physicians that a combination of bromids in small doses acts better than an equivalent large dose of a single bromid.

Hydrobromic acid should never be used as a substitute for a bromid. While it causes bromid action, it is acid and therefore more irritant to the gastrointestinal tract. There is no good reason for using hydrobromic acid.

The following preparations are found in the National Formulary:

**ELIXIR AMMONII BROMIDI:** Each teaspoonful represents 0.30 gram (5 grains) of ammonium bromid.

**ELIXIR CALCII BROMIDI:** Each teaspoonful represents 0.30 gram (5 grains) of calcium bromid.

**ELIXIR LITHII BROMIDI:** Each teaspoonful represents 0.30 gram (5 grains) of lithium bromid.

**ELIXIR POTASSII BROMIDI:** Each teaspoonful represents 0.60 gram (10 grains) of potassium bromid.

**ELIXIR SODII BROMIDI:** Each teaspoonful represents 0.60 gram (10 grains) of sodium bromid.

**LIQUOR MAGNESII BROMIDI:** Each teaspoonful represents 0.5 gram ( $7\frac{1}{2}$  grains) of magnesium bromid with syrup aurantii.

**MISTURA CHLORALI ET POTASSII BROMIDI COMPOSITA:** Each teaspoonful contains about 0.80 gram (12 grains) each of chloral hydrate and potassium bromid, and 0.008 gram ( $\frac{1}{8}$  grain) each of the extracts of cannabis indica and hyoscyamus.

**PULVIS POTASSII BROMIDI EFFERVESCENS:** A heaping teaspoonful contains about 0.65 gram (10 grains) of potassium bromid.

**PULVIS POTASSII BROMIDI EFFERVESCENS CUM CAFFEINA:** A heaping teaspoonful represents about 0.65 gram (10 grains) of potassium bromid and 0.065 gram (1 grain) of caffeine.

**SYRUPUS BROMIDORUM:** Each teaspoonful contains 1 gram (15 grains) of the mixed bromids of potassium, sodium, ammonium, calcium and lithium in compound syrup of sarsaparilla.

The potassium and sodium bromids are best administered in plain water, though they may be given in effervescing water if preferred. Any syrup makes the salty taste of the sodium bromid or the flat taste of the potassium bromid more disagreeable.

Bromid tablets should never be swallowed whole, as these concentrated salts may seriously irritate the stomach and cause severe pain and even pseudo-angina pectoris, and may even cause an ulcer of the stomach. Hence, whenever bromids are taken they should be ordered thoroughly dissolved and well diluted.

|                     |                    |       |
|---------------------|--------------------|-------|
| <b>R.</b>           | <b>gm. or c.c.</b> |       |
| Sodii bromidi ..... | 20                 | or 3v |
| Aque .....          | 100                | f℥iv  |

Sig.: Two teaspoonfuls in water, two hours before bedtime.

### CHLORAL

The action desired and expected from chloral is to produce sleep and to quiet excitability and irritability of the nervous system.

Chloral hydrate is more or less irritant to the skin and mucous membranes, depending on its concentration.

If it is diluted or in syrupy solutions, which it forms when rubbed up with camphor in equal parts, while the first sensation may be that of burning, especially when the skin is irritable, the secondary action is a sedative, the peripheral nerves being slightly dulled, and the part becomes mildly anesthetized. Chloral solutions or chloral combinations are therefore sometimes used locally with good effect when there is burning or itching of different parts of the body, such as in pruritus ani or pruritus vulvæ. The same burning action occurs when it is applied to mucous membranes, and is followed by a dulling of sensation. If the solution is too concentrated it may cause ulceration: therefore chloral should never be administered in powder or capsule, but should always be given in solution, well diluted.

Its primary systemic action is as a sedative to the brain and spinal cord. It seems to act specifically as a sedative to the brain cells and produces normal sleep. Whether this sleep occurs by actually stupefying the brain cells or by diminishing the circulation in the brain has not been determined. It is the nearest to a perfect hypnotic that we have, and may be used whenever a soporific drug is needed, provided there is no serious cardiac or circulatory debility. After an ordinary sized dose the patient awakens in normal condition, and without depression, unless the hypnotic has been frequently repeated. Larger doses will quiet the delirium of meningitis and will stop cerebral and spinal convulsions. When the convulsions are due to a spinal poison, as strychnin, or tetanus or hydrophobia, the dose of chloral must be very large, almost poisonous. Consequently, when such an action of chloral is desired, it should be conjointly given with large doses of bromid, and if the convulsions are frequent and severe chloroform must be resorted to rather than the administration of dangerous doses of chloral.

Chloral is a circulatory sedative, causing some vasodilatation, slowing, and in large doses weakening the heart. In diseased conditions of the heart it has been thought to have hastened death by causing cardiac failure. Except in small doses, it should not be given when the pulse tension is low and the heart action very weak. However, its quieting effect on the circulation and its causing, perhaps, much needed sleep has done a great

deal more good than it has ever done harm. Small doses, as 0.20 gram (3 grains) three times a day, have been given to reduce high tension in arteriosclerosis. It will sometimes do this effectually in this small dose, but perhaps generally the nitrites or iodids act better.

It circulates in the blood as chloral, and is excreted largely by the kidneys, ordinarily without causing irritation. It acts rapidly as a hypnotic, and should cause sleep in less than an hour. In concentrated solutions or when it finds the stomach in such a condition that it may be rapidly absorbed, or in poisonous dose ("knock-out drops"), it can produce sleep very rapidly.

In view of the fact that a few individuals show a peculiar idiosyncrasy for chloral—delirium, etc.—it is advisable to be cautious in giving it to a patient for the first time.

The symptoms of its profound action are more or less profound stupor, dilated pupils, cold, clammy perspiration, weak heart action, feeble pulse, and gradually failing respiration.

The treatment of chloral poisoning or poisoning by "knockout drops" is to wash out the stomach with warm water or to remove its contents by emetics. The body temperature should be kept up with dry heat applications, and strychnin should be given hypodermatically. If a full dose of strychnin, as  $1/20$  of a grain, does not improve the circulation, atropin in a dose of  $1/100$  of a grain should be given hypodermatically. If the circulation still fails, resort should be had to intramuscular injections of a saturated solution of camphor in olive oil, 1 c.c. (15 minims), which may be repeated every fifteen minutes for several times, if needed, or an adrenalin or suprarenalin solution (1 to 1,000) given once, in a dose of 1 c.c. (15 minims). If the respiration fails, artificial respiration should be resorted to.

If at any time after the administration of a therapeutic dose of chloral cardiac depression occurs, strychnin and digitalis should be given.

#### ADMINISTRATION

Chloral is a very disagreeable drug to take. It can not be given hypodermatically on account of the size of the dose and the irritation that it causes. It is rarely



advisable to give it by the rectum unless convulsions prevent its administration by the mouth. It has a nauseating, acrid, burning taste which is not readily disguised. It should always be given well diluted.

Chloralum Hydratum, U. S. P., occurs in crystals which are very soluble in water and alcohol. It is incompatible with alkalies. The ordinary dose is 1 gram (15 grains), and when given by the rectum 1.50 grams (22½ grains).

As above stated, it is almost impossible to disguise the taste of chloral, but it is perhaps best administered in sour solutions, or it may be ordered in plain water and given in fresh lemonade.

|                        |             |         |
|------------------------|-------------|---------|
| R.                     | gm. or c.c. |         |
| Chlorali hydrati ..... | 10          | or ʒiii |
| Aquæ .....             | 50          | ʒʒii    |

M. et Sig.: A teaspoonful in half a glass of fresh lemonade, or in carbonated water, one-half hour before bedtime.

Or:

|                            |             |         |
|----------------------------|-------------|---------|
| R.                         | gm. or c.c. |         |
| Chlorali hydrati .....     | 10          | ʒiii    |
| Syrupi acidi citrici ..... | 25          | or      |
| Aquæ .....                 | ad 50       | āā, ʒʒi |

M. et Sig.: A teaspoonful, in plenty of water, at bedtime.

Or:

|                        |             |            |
|------------------------|-------------|------------|
| R.                     | gm. or c.c. |            |
| Chlorali hydrati ..... | 20          | ʒivss      |
| Syrupi aurantii .....  | 50          | or         |
| Aquæ .....             | ad 100      | āā, ʒʒiiss |

M. et Sig.: A teaspoonful, with plenty of water, as directed.

Chloral is often combined with one or more bromids. Generally, however, it is best to have these nerve sedatives in separate solutions so that one may be increased or diminished without variation in the dose of the other, if it is so desired. For instance, in delirium tremens it may be best to continue the bromid and to stop the chloral, or to increase the amount of bromid without increasing the amount of chloral. However, if it is desired to combine them they may be given as follows:

|                            |             |          |
|----------------------------|-------------|----------|
| R.                         | gm. or c.c. |          |
| Chlorali hydrati .....     | 5           | ʒiiss    |
| Potassii bromidi .....     | 10          | or ʒiii  |
| Syrupi acidi citrici ..... | 50          |          |
| Aquæ .....                 | ad 100      | āā, ʒʒii |

M. et Sig.: Two teaspoonfuls, in water, and repeated in two hours if deemed advisable.

Shoemaker suggests the following combination:

| R.                      | gm. or c.c. |           |
|-------------------------|-------------|-----------|
| Chlorali hydrati .....  | 10          | 3iii      |
| Potassii bromidi .....  | 15          | or 3ivss  |
| Syrupi lactucarii ..... | 50          |           |
| Syrupi aurantii .....   | ad 100      | āā, fl3ii |

M. et Sig.: Two teaspoonfuls in plenty of water, at bed-time.

The National Formulary recognizes *mistura chlorali et potassii bromidi composita*. Four cubic centimeters (1 fluidram) of this preparation contain 0.80 grams (12 grains) each of chloral and potassium bromid. and 0.008 gram ( $\frac{1}{8}$  grain) each of extract of cannabis indica and hyoseyamus. The dose is a teaspoonful.

When there is pain chloral may be combined with morphin to produce sleep, as:

| R.                       | gm. or cc. |          |
|--------------------------|------------|----------|
| Morphinæ sulphatis ..... | 108        | gr. iss  |
| Chlorali hydrati .....   | 5          | or 3iss  |
| Glycerini .....          | 10         | fl3iii   |
| Aquæ .....               | ad 50      | ad fl3ii |

M. et Sig.: A teaspoonful, in water, as directed.

The National Formulary also recognizes *chloral camphoratum*, a combination of equal parts of chloral and camphor, which, as above stated, when rubbed together make a liquid. This preparation is for external use as a sedative for painful nerves and for itching when there is not much irritation of the skin.

Cocain may be added to this combination, as:

| R.                          | gm. or cc. |         |
|-----------------------------|------------|---------|
| Cocainæ hydrochloridi ..... | 60         | gr. x   |
| Camphoræ .....              | 15         | or      |
| Chlorali hydrati .....      | 5          | āā, 3ss |

M. et Sig.: Use externally as directed.

The combination of chloral and camphor may also be used on flea and mosquito bites.

Chloral hydrate applications are sometimes used in urticaria, as:

| R.                     | gm. or c.c. |           |
|------------------------|-------------|-----------|
| Chlorali hydrati ..... | 5           |           |
| Acidi borici .....     | 5           | or āā, 3i |
| Aquæ camphoræ ...      | 200         | fl3vi     |

M. et Sig.: Use externally.

Chloral hydrate may be incorporated into an ointment and may be thus used locally in neuralgias and myalgias, as:

| R.                     | gm. or c.c. |                 |
|------------------------|-------------|-----------------|
| Chlorali hydrati ..... | 5           | or    āā, 3iiss |
| Camphoræ .....         | 5           | 3i              |
| Petrolati albi .....   | 25          |                 |

M. et Sig.: Use externally.

If chloral is added to a stimulating liniment it will increase its counterirritant action, as:

| R.                          | gm. or c.c. |             |
|-----------------------------|-------------|-------------|
| Chlorali hydrati .....      | 5           | or    3iiss |
| Linimenti chloroformi ..... | 100         | fl3iv       |

M. et Sig.: Use externally.

#### CHLORALAMID

Chloralformamidum U. S. P. occurs as crystals which are a compound of chloral and formamid. It is soluble in water in 5 per cent. solution, and is very soluble in alcohol and glycerin. The dose is 1 gram (15 grains).

Chloralamid may be epigrammatically described as acting "just like chloral, only less so." This means that it is less soluble, less irritant, less rapidly absorbed, less powerful as a hypnotic, has less nerve sedative action on the brain and spinal cord, and is less of a circulatory depressant.

On account of its being less irritating in the stomach than chloral it may be administered in capsules, as:

| R.                      | gm. |             |
|-------------------------|-----|-------------|
| Chloralformamidi .....  | 10  | or    3iiss |
| Fac capsulas siccas 20. |     |             |

Sig.: Two capsules, with a glass of water, two hours before bedtime.

Chloralamid is better, however, administered in solution, as:

| R.                      | gm. or c.c. |            |
|-------------------------|-------------|------------|
| Chloralformamidi .....  | 10          | 3iii       |
| Glycerini .....         | 25          | or    fl3i |
| Spiritus frumenti ..... | ad 100      | ad fl3iv   |

M. et Sig.: Two teaspoonfuls, in a half glass of water, one hour before bedtime.

#### PARALDEHYD

Paraldehyd is a colorless liquid, pungent, irritant, and of a disagreeable odor. While theoretically it should be a stimulant and its action resemble that of alcohol, practically it is such a strong narcotic and hypnotic that its soporific and prostrating effects overcome any stimulant action that it possesses. Its action on the skin

would be irritant, especially if its rapid evaporation were prevented. In mucous membranes it causes burning, and if not well diluted irritation and even inflammation. It is so active in this respect that it is even difficult to swallow it into the stomach without choking unless its evaporating and burning properties are held in check by iced water. It is so rapidly absorbed from the stomach that its effect is sometimes almost instantaneous. The heart is quickly stimulated, the pulse bounds and throbbing is felt in the head and arteries of the neck similar to that produced by a large dose of a nitrite, and the patient becomes momentarily dizzy and later faint. The dizziness is due to an increased cerebral circulation, while the faintness is probably due to the dilated blood vessels of the body causing slight cerebral anemia. An uncontrollable desire to sleep quickly develops and the patient may be sleeping soundly in five or ten minutes. How much of this sudden sleep is due to an actual narcotic effect on the brain, and how much is due to an anemia of the brain caused by a rapid dilatation of the blood vessels of the body, has not been determined. On account of the stimulant effect on the heart and the lack of any profound nervous poisoning from the drug, even large doses have not produced death, although frequently the first symptoms from paraldehyd are so intensely disagreeable and disturbing to the patient that he or she will refuse to ever take the drug again. Large doses, however, can produce a condition of unconsciousness from which the patient, at least temporarily, can not be aroused.

It is excreted mostly in the urine, but considerably by the lungs, and imparts a disagreeable odor to the breath for some hours after the patient awakens.

The sleep caused by paraldehyd is not protracted, and with a therapeutic dose is normal, and the patient awakens without any prostrating effects. It is a hypnotic to which the system becomes used, and larger doses are required to produce sleep; also a paraldehyd habit can be formed, the patient not only learning to need a hypnotic, but craving the stimulation which paraldehyd causes. It seems to have a greater action in a smaller dose in young patients than in those that have a high blood pressure; in other words, patients who can stand a large dose of

nitrites without discomfort will require a large dose of paraldehyd to produce sleep. It is not analgesic, and except in large doses will not relieve pain, and if the pain is severe its hypnotic action would be counteracted unless the dose were excessive. In weakened conditions of the heart it is a safer hypnotic than chloral, and is used frequently in the delirium of serious illness, as pneumonia and typhoid, but not always successfully. It is so likely to disturb the stomach in serious conditions that generally it should not be used. It is frequently used as a hypnotic in delirium tremens, and probably acts satisfactorily in this disease through its various activities. i. e., the throat and stomach irritation is satisfactory to the alcoholic patient, the stimulation of the heart is not unlike that of alcohol, and if the dose is sufficient it may produce the much desired sleep.

If a poisonous dose has been taken, or if unexpected intense action is developed from a therapeutic dose, the treatment would be that of a narcotic depressant poison and similar to that of chloral. An emetic should be administered if the patient is seen soon after ingestion of the drug. The body should be kept warm with dry heat, and hypodermatic injections of strychnin, camphor and adrenalin solutions should be given. Atropin could be used if deemed necessary.

The official preparation is Paraldehydum, and the dose is 2 c.c. or 30 minims.

Various menstrua have been suggested in which to administer this disagreeable drug, but there is no menstruum better than iced water, as:

|                   |      |           |
|-------------------|------|-----------|
| R.                | c.c. |           |
| Paraldehydi ..... | 50   | or fl.℥ii |

Sig.: A half teaspoonful on cracked ice and water at bedtime.

Ordinarily when this drug is administered the patient should be already in bed and the room quiet and prepared for sleep.

It may also be administered as follows:

|                   |      |            |
|-------------------|------|------------|
| R.                | c.c. |            |
| Paraldehydi ..... | 50   | fl.℥ii     |
| Glycerini .....   | 25   | or fl.℥i   |
| Aquæ, ad.....     | 100  | ad, fl.℥iv |

M. et sig.: A teaspoonful, in plenty of water, at bedtime.

The National Formulary recognizes an Elixir Paraldehydi, the dose of which is 8 c.c. (2 fluidrams), which



represents 2 c.c. (30 minims) of paraldehyd. The ordinary dose is two teaspoonfuls, administered in plenty of water.

---

### SULPHONAL

Sulphonal is official under the name of sulphon-methanum. It is a synthetic product, and occurs as a crystalline, colorless powder, without odor or taste. It is almost insoluble in cold water, and but slightly soluble in alcohol.

It is a hypnotic, and has no other therapeutic uses. It is not irritant to either skin or mucous membranes, is but slowly absorbed from the stomach, and hence acts but slowly in producing sleep, and the full effect of the drug may not be felt for four or five hours after its ingestion. It also seems to be so slowly excreted that the second dose taken on the following evening will cause a much better and more prolonged sleep than did the first dose. It acts chiefly on the cerebral cortex, and produces a sleep resembling natural sleep, which lasts from six to eight hours. The patient generally awakens without any ill effects, but occasionally there is some dizziness, and a feeling of weakness, or of general lassitude. It does not act on the peripheral nerves, and is not an analgesic. Under its full action the reflexes may be diminished, probably by central inhibition. It has no marked action on the circulatory system, and is excreted in the urine chiefly as ethyl sulphonic acid. When large doses are taken part of it is eliminated by the intestines, and part may be excreted as sulphonal in the urine.

While death has been attributed to 2.0 grams (30 grains) of sulphonal, enormous doses have been recovered from. It is probable that if a patient were otherwise healthy it would take a very large dose of sulphonal to cause death. The symptoms of its overaction are profound and prolonged sleep, with a gradually failing circulation and respiration.

Chronic poisoning is not infrequently noted, either from the careless use of the drug or from an actual sulphonal habit. There is a general loss of strength, gas-

trointestinal indigestion, often diarrhea, loss of weight, and mental sluggishness, or even symptoms suggesting general paresis. There may be weakness of the legs, disturbed patellar reflexes, and cerebral delusions and illusions, and gradual loss of mental power. From repeated doses, and especially from prolonged use of sulphonal, the kidneys become degenerated, albuminuria occurs, and the urine is of a pinkish or cherry-red color. Although sulphonal may cause an actual hemoglobinuria, this discoloration is due to a decomposition of the hemoglobin of the red blood corpuscles and a production of hematoporphyrin.

Sulphonal even in a single dose, and frequently when doses are repeated, may cause a slight eruption on the skin, either papular or scarlatiniform in character.

The treatment of acute poisoning by sulphonal is to hasten the elimination in every way possible, viz., by purgatives, and by the administration of large amounts of water by the stomach and by the rectum to hasten the elimination through the kidneys. If collapse is present it should, of course, be treated as usual by dry heat and the proper circulatory stimulants.

Chronic poisoning, or the sulphonal habit, requires a long period before health may be restored, and it is doubtful if the kidneys ever become again perfect. Sleeplessness must be combated by some drug other than a synthetic product. General tonics, forced feeding, massage, hydrotherapy, and fresh air, should all be utilized in restoring the patient to health, and such treatment and diet should be instituted as is conducive to restoring irritated or damaged kidneys to normal.

Sulphonal may be selected as a safe hypnotic in ordinary insomnia. It will not combat pain, and it is not sufficiently depressant to prevent its use in ordinary weak conditions of the circulation. It has been used considerably in the insomnia of insanity, but the dose required for this purpose is large. It should be remembered that repeated doses on successive days have an increasing hypnotic effect, at least for a time. If taken for a long period, however, it does cause prostration and muscle debility and a lack of appetite. Also, there is the same danger of forming a habit from this drug as from

any other hypnotic. It has been used in the deliriums of acute febrile diseases, and often is efficient and valuable. It is frequently used in alcoholic deliriums, but is not so efficient as chloral or paraldehyd. It has been employed in spasmodic conditions as in chorea, epilepsy, and muscle cramps, but other drugs are better for this purpose.

The drug acts so slowly that it is not advisable in ordinary insomnia to repeat the dose on the same night. Consequently the dose selected should be sufficient to produce sleep. This is ordinarily 1.0 gram (15 grains), best administered in powder, and drunk with hot water or hot milk at least four hours before bedtime. If the sulphonal is to be repeated on successive nights, less than the above dose will generally prove efficient.

If sulphonal is given for sleeplessness and delirium during an acute disease, a smaller dose, as 0.50 gram ( $7\frac{1}{2}$  grains) should be given, which can be repeated in five hours if the first dose does not cause sleep. It may be ordered as follows:

|                |       |     |             |
|----------------|-------|-----|-------------|
| R.             |       | gm. |             |
| Sulphonmethani | ..... | 5]  | or gr. lxxv |
| Fac chartulas, | 5.    |     |             |

Sig.: One powder, with a glass of hot milk, at 5 p. m.

### TRIONAL

Trional is official under the name of sulphonethylmethanum, and is a synthetic product chemically similar to sulphonal, which occurs as colorless crystals, without odor, and of a bitter taste. It is readily soluble in alcohol, and slightly soluble in water.

Trional is not irritant to the skin or mucous membranes, and, being more soluble than sulphonal, is more quickly absorbed from the stomach, and consequently shows its hypnotic action sooner. It causes sleep, generally within an hour, which lasts about six hours. Its physiologic action is similar to that of sulphonal. It is excreted by the kidneys, and can cause the same discoloration of the urine as described under sulphonal. It is as little liable to cause acute cardiac depression or acute poisoning as is sulphonal, but prolonged use can cause the same chronic debility and kidney irritation.

The treatment of acute poisoning, or chronic poisoning, or a trional habit, is the same as described under sulphonal.

Its only use is as a hypnotic, and under the same conditions as those for which sulphonal is prescribed. It has been thought that it would cause less disturbance, as it acts more quickly and in a smaller dose than does sulphonal.

The usual dose of trional is 0.60 gram (10 grains), best administered in capsules, with a glass of hot water or hot milk, an hour before bedtime, as:

|                     |       |            |            |
|---------------------|-------|------------|------------|
| <b>R.</b>           |       | <b>gm.</b> |            |
| Sulphonethylmethani | ..... | 3.         | or gr. xlv |
| Fac capsules,       | 10.   |            |            |

Sig.: Two capsules, with hot water, an hour before bedtime.

---

### SCOPOLAMIN

Scopolamin (hyoscin) is an alkaloid occurring in hyoscyamus together with hyoscyamin and hyoscyperin, but in its manufacture is mostly obtained from other sources. It is closely allied to atropin, both in its chemical constituency and in its physiologic action.

The official preparation is *Scopolamine hydrobromidum*, which occurs as transparent, colorless, crystals of a bitter, disagreeable taste, soluble in alcohol, and very soluble in water. The beginning hypodermatic dose is .0003 gram (1/200 grain).

The official *Hyoscinæ hydrobromidum* is identical chemically and physiologically with the scopolamin hydrobromid.

Scopolamin (hyoscin) acts locally similarly to atropin, viz., it dulls and numbs the peripheral terminations of nerves, whether in the eroded skin or in mucous membranes, causes dryness of the throat, benumbing of the tongue, and a diminished secretion of saliva. It dilates the pupil more quickly than atropin, but the dilation does not last so long.

After absorption its action ordinarily is quite different from that of atropin both on the nervous system and on the circulatory system. Although there may be a slight period of cerebral excitement, the effect is generally hypnotic. This is especially marked when it is ad-

ministered hypodermatically, a dose of 1/100 of a grain usually putting a patient to sleep in a few minutes. Occasionally scopolamin causes cerebral excitation similar to that caused by atropin, and perhaps even more active. Such patients show an idiosyncrasy against this drug, and as it is not of infrequent occurrence, should always be suspected until the patient's behavior under the drug has become known. A dose of 1/100 of a grain may cause wild excitement and delirium which may last for some time unless inhibited by a hypodermatic injection of morphin, or the administration of bromids or chloral. During such excitation the pupils are dilated, the throat dry, the face flushed, and the heart rapid.

Unlike atropin, which is a stimulant to the heart and a contractor of the blood vessels, scopolamin generally has but little such effect, and even an ordinary hypodermatic dose, 1/200 or 1/100 of a grain, may cause some cardiac and circulatory depression. In fact, when there is cardiac weakness scopolamin should not be administered. This unpleasant debilitating action on the heart is sometimes noticed when this drug is administered in delirium tremens; consequently, it should not be administered to any patient unless the circulation is at least fairly good and the patient can be at rest in bed. In other words, it is inadvisable to administer scopolamin to a delirious patient, when that patient must subsequently be moved to a hospital or to his home.

On account of the occasional undesirable stimulation of the brain by scopolamin and the frequent profound depression of the circulation that it can cause, the beginning dose to any patient whose tolerance is not known should be 1/200 of a grain hypodermatically. To repeat, it should be thoroughly understood that the action on the circulation clinically is never that of atropin. In other words, atropin may be administered in shock; scopolamin may cause shock.

The sleep from this drug lasts six or seven hours, and may be intensified or prolonged by the coincident administration of morphin. A combined injection of 1/200 of a grain of scopolamin (hyoscin) hydrobromid and 1/8 of a grain of morphin sulphate will generally cause prolonged and satisfactory sleep. Such a combination in emergencies is perhaps better than a larger dose of



scopolamin, but, of course, if scopolamin is to be repeated for a time the morphin should not be given in combination, lest a habit be formed. On awakening from a scopolamin sleep there is often slight circulatory weakness. This signifies that the drug generally should not be administered to a patient as a hypnotic if that patient must arise in the morning and attend to active business. As a hypnotic it should be reserved for the sleeplessness occurring in acute conditions. It is often a satisfactory drug to use in delirium tremens and in the meningitis of pneumonia and typhoid fever. It must not be forgotten, however, that a larger dose may be required when there is active delirium, and such a dose may be followed by circulatory depression. The drug is often of great value in the sleeplessness of insanity, whatever the type. If for any reason scopolamin is given continuously for a time the patient acquires a tolerance and needs a larger dose than at first to cause sleep.

Although a combination of morphin and scopolamin is now often used as a prelude to ether and chloroform anesthesia, it seems inadvisable to give these drugs that cause depressant action on the respiratory center so that the anesthetist can not decide whether respiratory or cardiac failure is due to the previously given drugs or to the anesthetic. If he thinks that the anesthetic is causing the depression he may allow the patient to come sufficiently out of the influence of the anesthetic to permit shock to occur from reflex nerve pain. Morphin and scopolamin are now often administered in sufficient doses to produce anesthesia for operations or for a painless parturition without the subsequent aid of an anesthetic. While such use at times may be advisable and perhaps may be the best method of producing a loss of nerve sensation, it would be unwise to consider it universally correct or advisable.

The best method of administering scopolamin (hyoscin) is hypodermatically, but it is often advisable to give it for solution in the mouth or in a teaspoonful of water, and for this purpose the ordinary hypodermic tablet is the most satisfactory. The dose thus given by the mouth should not be larger than the hypodermatic dose, viz.,  $1/200$  of a grain.

Scopolamin has been used as a nerve and muscle sedative in paralysis agitans. The beginning dose for this purpose is small, 0.00015 to 0.0002 gram (1/400 to 1/300 grain) two or three times a day. The patient rapidly becomes tolerant to the drug and requires an increase in the dose. It is therefore best, if possible, to use the drug only at such specific times as it may be necessary to quiet the hand tremor that the patient may write his signature. In such small doses, and on account of the tolerance he soon develops, the drug does not exert its hypnotic influence. It may be ordered for this purpose as follows:

|                                |                    |          |
|--------------------------------|--------------------|----------|
| <b>R.</b>                      | <b>gm. or c.c.</b> |          |
| Scopolaminæ hydrobromidi ..... | 003 or             | gr. 1/25 |
| Aquæ menthæ piperitæ.....      | 100                | ℥iiss    |

M. et Sig.: A teaspoonful two or three times a day, as directed.

# CIRCULATORY DEPRESSANTS

---

## VERATRUM VIRIDE

While a cardiac depressant seems less and less frequently needed in this age of high tension and heart tire, still there is occasionally a positive indication for lowering the blood pressure. It is acutely indicated in puerperal eclampsia, and is sometimes continuously indicated in arteriosclerosis and chronic interstitial nephritis, or Bright's disease.

We have passed through the various stages of beginning the treatment of acute inflammations or infections (as typified by pneumonia) with first severe, and then gradually less and less severe, depleting measures. Venesection, tartar emetic, calomel, aconite, veratrum viride and, finally, coal-tar products have all had their acme of use for this purpose. The physician now hesitates to do anything, however apparently advisable, toward aborting or diminishing the intensity of the first symptoms of an acute inflammation, lest sooner or later cardiac depression may be hastened or developed by the treatment used. It is quite possible, however, that a judicious lowering of the blood pressure is often advisable, and it becomes a question which is the safest way to reduce this pressure: by profuse catharsis, by judicious venesection, by one or two doses of a coal-tar product, or by aconite. The activities of veratrum viride have been forgotten, and have been repudiated by many pharmacologists, perhaps unjustifiably so.

The selection of a drug to lower blood pressure in acute inflammations, when the type of the disease is sthenic, is certainly a subject for careful consideration, and that method should be used which will cause the least cardiac debility or weakness. There can be no question of the advantage and necessity of a complete emptying and cleansing, so to speak, of the alimentary canal. It is quite another question whether it is advisable to cause a series of profuse watery stools. There also can be no question that a dose or two of a coal-tar

antipyretic, when the temperature is very high, to cause its diminution and to promote perspiration, is advisable. Later in the disease cold water treatment is, of course, the proper method to use. While the most active and temporarily efficient vasodilators are the nitrites, their action is short-lived and oftentimes unsatisfactory in acute inflammations. The lowering of the blood pressure with aconite of necessity carries with it some weakening of the cardiac muscle, and while a few doses may be advisable, a longer action of this drug is generally inadvisable. Consequently, it may be well to review clinical observations, the value of which is sometimes greater than laboratory research on healthy animals.

Such a review of the clinical findings from the action of Norwood's tincture of veratrum viride is presented to us by Dr. J. S. Todd, Atlanta, Ga., in the *Therapeutic Gazette*, Feb. 15, 1909.

He deplors the present lack of use of this drug, which he considers very useful, and states that it is largely a vasodilator and does not severely depress the heart. If a small dose of morphin,  $1/20$  of a grain, or half a teaspoonful of paregoric, is given with each dose of veratrum, he states that nausea, vomiting, diarrhea, profuse sweating, giddiness or collapse will rarely take place. "The pulse can be kept soft and at about 65 or 70," and the temperature kept low with the proper administration of veratrum viride. He advises the use of 0.10 c.c. ( $11\frac{1}{2}$  minims, or 3 ordinary drops) of Norwood's tincture of veratrum viride, and he would administer this not oftener than once in three hours. He says that the dose of veratrum viride is often too large, and, unless it is administered in puerperal convulsions, the dose should be kept as above. In the latter condition he would give 0.30 c.c. (5 minims, or 10 drops) hypodermatically.

As opium will prevent the unpleasant symptoms from veratrum, so, says Todd, "is veratrum a valuable antidote in opium poisoning."

Many times in aortic insufficiency or regurgitation, in arteriosclerosis, and in Bright's disease (cardiovascular-renal disease) digitalis may be indicated, but, as it causes increased blood pressure, it is either deemed inadvisable or must be combined with some vasodilator.

To meet this indication Todd advises the use of a combination of digitalis and veratrum viride as follows:

| R.                               | gm. or c.c. |            |
|----------------------------------|-------------|------------|
| Strychninæ nitratis .....        | 03          | gr. ss     |
| Pulveris digitalis .....         | 2           |            |
| Pulveris scillæ .....            | 2           | or āā, 3ss |
| Pulveris zingiberis .....        | 4           | 3i         |
| Tincturæ veratri (Norwood) ..... | 3           | m. xlv     |

M. et fac capsulas, 30.

Sig.: A capsule as directed.

Todd advises the administration of one of the above capsules every four, six, eight or twelve hours, as needed.

The editorial department of the *Therapeutic Gazette*, Feb. 15, 1909, calls attention to the value of veratrum viride in puerperal eclampsia, and quotes the results of Mangiagalli, of Milan, in the use of this drug in this disease. Mangiagalli's percentage of mortality since he has used veratrum viride in eclampsia is most satisfactory, the mortality having been reduced from 23 per cent. to 7 per cent.

He uses the best fluid extract of veratrum viride, and administers it hypodermatically in doses of from 0.30 c.c. to 0.60 c.c. (5 to 10 minims), and repeats the dose as often as the blood pressure becomes too high, the blood pressure being accurately determined by the sphygmomanometer. He considers another dose indicated when the pressure exceeds 160 millimeters. The pulse should, if possible, be kept below eighty beats a minute, but if the pulse becomes rapid and small and arterial tension low, veratrum viride is contraindicated.

It is not considered that veratrum viride has any antagonistic action on the toxins of eclampsia, but the benefit derived seems to be entirely due to a lowering of the arterial pressure, and this is evidently an important factor in causing death in puerperal eclampsia. In other words, the high blood pressure may be the cause of cerebral edema and exudate, and thus the cause of convulsions and coma.

## NITRITES

The value of the nitrites seems to be in their ability to reduce the blood pressure. In some instances such reduction needs to be instantaneous, and in other conditions, as in arteriosclerosis and chronic nephritis, it is



sometimes advisable to keep the blood pressure constantly reduced.

#### OFFICIAL PREPARATIONS

AMYLIS NITRIS, nitrite of amyl, is a very volatile liquid which is administered by inhalation only, and the dose is a few drops on the handkerchief, or a glass capsule (or "pearl") is broken in a handkerchief and thus inhaled.

SPIRITUS GLYCERYLIS NITRATIS, the spirit of nitroglycerin, or glonoin, or trinitrin, as it is also termed, is a 1 per cent. solution of nitroglycerin, and the dose is one or two drops, administered in water.

SODII NITRIS, sodium nitrite, occurs in white opaque masses or as crystals. It is odorless and has a mild saline taste. It quickly changes to the nitrate on exposure to the air and is then unfit for use. It is very soluble in water, and the dose is 0.065 gram (1 grain).

Nitroglycerin is also offered in tablet triturate form, the dose ranging from  $1/400$  to  $1/50$  of a grain.

#### ACTION OF THE DRUG

The action of amyl nitrite as a vasodilator is instantaneous, and with this action the heart is accelerated and the head feels full and throbs. It sometimes causes severe headache. If the amount inhaled is considerable the patient becomes faint, and always after nitrite of amyl has been used the patient should remain at rest for some time. The intensity of the action is soon over and, therefore, nitrite of amyl is indicated when instantaneous effect is desired, as typically in angina pectoris, or during the aura of an epileptic seizure. In the first instance, it obviates the danger of cardiac spasm, and in the second instance may abort the convulsion. In sudden cardiac failures, as in ether or chloroform narcosis, nitrite of amyl has sometimes been administered, but for such purposes is rarely indicated.

When a more prolonged vasodilator effect is desired, nitroglycerin is indicated, either administered hypodermatically in soluble tablet where the dose should rarely be more than  $1/100$  of a grain, or a tablet is allowed to dissolve on the tongue, or a drop or two of the spirit of nitroglycerin, or when slower action is desired, swallowed after a meal. Unless the condition is one of emergency and the quick stimulating effect

of nitroglycerin is desired which will immediately be followed by dilatation of the peripheral blood vessels, nitroglycerin should be swallowed after a full meal. In this way the sudden, intense action with throbbing and fulness in the head is obviated. Nitroglycerin may be administered, when considerable dilator action is desired, every three or four hours, but three times a day, or perhaps better, four times a day (i. e., after each meal and at bedtime), is generally the frequency that is sufficient to continuously keep a high blood pressure slightly reduced. In hypertension in chronic endarteritis or arteriosclerosis it may frequently be noted that a small dose acts more satisfactorily than a larger one. i. e., many times  $1/400$  of a grain of nitroglycerin will act better than a larger dose. It must be remembered that such patients do not do well with low tension. Nitroglycerin is also very efficient and very successful in overcoming cardiac distress and dyspnea when there is aortic narrowing, when the left ventricle is not weakened.

Nitroglycerin also often relieves insomnia, when given at bedtime, by causing enough relaxation of the vessels to produce normal anemia of the brain—this in old people. Also, many times in continued fevers when alcohol seems indicated, nitroglycerin may be substituted to cause just sufficient dilatation of the surface vessels to aid in diminishing the temperature, which is one of the valuable actions of alcohol in fever.

It should be emphasized that the disagreeable, sudden and unpleasant effect of nitroglycerin may be obviated by giving smaller doses and by administering it after a meal and swallowing it with water; in other words, not allowing the medicine to be absorbed from the mouth.

The value of nitroglycerin in asthma to abort or to shorten the acute attack is well understood. The dose selected, perhaps  $1/100$  of a grain, should be administered every fifteen minutes until the severe headache or frontal throbbing is relieved, at which time the bronchial spasm will generally have relaxed.

While nitroglycerin is not so quick in its action as nitrite of amyl, and is more prolonged, its action is not so lasting as that of sodium nitrite, hence sodium nitrite is often used in its place. This drug should be administered three times a day, after meals, as:

|                              |     |           |
|------------------------------|-----|-----------|
| R.                           | gm. |           |
| Sodii nitritis . . . . .     | 1   | or gr. xv |
| Sodii bicarbonatis . . . . . | 20  | 3v        |

M. et fac chartulas 20.

Sig.: One powder, three times a day, after meals.

If the above alkali is not indicated as it often is in patients who need nitrites, any simple powder, as sugar of milk or any other combination, may be made that is deemed advisable.

H. Vaquez. *Archives des Maladies du Cœur, des Vaisseaux et du Sang*, January, 1908, advises the use of sweet spirits of nitre, spiritus ætheris nitrosi, not so much to decrease the vascular tension as for the general sedative effect on the circulation. If the sweet spirits of nitre is freshly prepared it may have some vasodilator effect on the circulation, but for this purpose it is rarely used in the United States. the other preparations meeting better the indications for which nitrites are used.

# ALKALIES

---

## GENERAL CONSIDERATIONS

Few drugs are administered more frequently than are the alkalies, and they are often given, and frequently continued, without a perfect understanding of what they do in, and to, the system.

Dr. Eustace Smith, in the *British Medical Journal*, Jan. 30, 1909, opportunely instances the pathologic conditions for which alkalies are administered and the disturbances that their long administration may cause.

In the first place, it would be well to distinguish between antacids or drugs that act as alkalies in the stomach, and alkaline drugs that increase the alkalinity of the blood and tend to render the urine alkaline. The principal antacids are ammonia, chalk, lime water, magnesia, and sodium bicarbonate, while the drugs that are used to render the urine alkaline are, principally and best, the alkaline potassium salts such as the acetate, bicarbonate and citrate.

The antacids taken before meals, if in small doses and properly diluted, act locally to neutralize any stomach acidity that may be present, and are often soothing to an inflamed gastric mucous membrane. Smith advises that the dose of an antacid, if given three times a day, should be small, and that, as soon as it has ceased to be obviously beneficial, it should be discontinued.

If most alkalies are long continued the alkalinity of the blood is increased, secretions are modified, waste is promoted, and anemia may be the result. Even if the potassium salts are deemed advisable, they should not be too long continued, as a continued alkalinity of the urine is inadvisable on account of its tendency to cause cystitis. In some patients the bladder is very susceptible to the alkaline potassium salts and these individuals have an irritation of the bladder as soon as the urine becomes alkaline. It should also be recognized that,

although we may render an acid urine alkaline, we still are often not treating the disturbance that causes the acid condition, and the disturbance may continue although the symptom of hyperacid urine has been changed.

#### ALKALIES IN HYPERCHLORHYDRIA

Hyperacidity of the stomach, or hyperchlorhydria, is of frequent occurrence, due to too rapid eating, to the eating of too much meat, to the eating of too highly seasoned foods, to the use of too many irritant condiments, to nervous irritability, to high tension, and to worry. Such hyperacidity is better treated by eliminating, if possible, the cause of the trouble. Temporary relief, however, will always be afforded by the administration of an antacid, and the burning, distress, pyrosis, and flatulence that may be present will all be made immediately better by the administration of 1 gram (15 grains) of bicarbonate of soda. Such treatment is, of course, purely symptomatic. If it is advisable to give bicarbonate of soda, which is perhaps the best of all the antacids, three times a day, before meals, the dose should be smaller, perhaps generally 0.50 gram ( $7\frac{1}{2}$  grains). It will act, as above stated, as a gastric sedative and will soothe the irritated mucous membrane, will cause a quicker outpouring of the hydrochloric acid, and will thus hasten the completion of the stomach proteid digestion: all of which will tend to make the disturbance and the dyspepsia better, but, unless there is actual inflammation of the stomach, is not treating the cause. If gastritis is present, no one treatment is perhaps more successful than the combination of bismuth and soda, as:

|                      |       |     |    |       |
|----------------------|-------|-----|----|-------|
| R.                   |       | gm. |    |       |
| Bismuthi subnitratis | ..... | 20  | or | 3v    |
| Sodii bicarbonatis   | ..... | 10  |    | 3iiss |

M. et fac chartulas, 20.

Sig.: A powder three times a day, before meals.

A glass of hot water taken a half-hour before the meal to wash off the mucus from, and to deplete, the inflamed gastric mucosa is, of course, excellent treatment.

It is not the purpose of this article to discuss the diet in gastric disturbance. It may be stated, however, that if the antacid is given after a meal the digestion



of the starchy foods will go on longer than usual on account of the alkali keeping the contents of the stomach longer alkaline, viz., free hydrochloric acid or a large amount of acid peptones will not so soon be present to inhibit further salivary digestion.

If with the dyspepsia, or gastritis, constipation is present, some magnesium oxid should be added to the above prescription or substituted for the sodium bicarbonate. Also in hyperacidity the precipitated carbonate of lime is used, and is often a most successful treatment.

If an antacid is indicated and diarrhea is present, it is advisable to use lime water.

If an acute hyperacidity is present and there is palpitation or cardiac disturbance, hysterical or other, the aromatic spirits of ammonia is perhaps the best antacid to use.

If for any reason alkalies must be administered for some time, it should be remembered that the sodium salts are better tolerated than the potassium salts, as potassium is depressant to muscles, while sodium is hardly a depressant at all.

If there is diarrhea with tendency to acidity of the intestinal contents, the official *Mistura Rhei et Sodæ* is often good treatment. Valuable also is the *Pulvis Cretæ Aromaticus* of the National Formulary, which may be given separately or combined with bismuth.

In combating intestinal acidity the alkalies should be the insoluble ones, of which magnesia is perhaps the best type.

#### TOO ACID URINE

The advisability or necessity for alkalizing the urine is not of very frequent occurrence. The administration of alkalies to render the blood more alkaline does not prevent gouty deposits and does not prevent the formation of uric acid. If the urine is hyperacid, or if there is a uric acid deposit in the urine, the administration of a sufficient amount of alkalies will prevent such deposit and prevent such acidity, but will not prevent the cause of the disturbance. As a solvent for crystalline or other deposits anywhere in the system nothing, perhaps, is better than pure distilled water. On the other hand, it is a fact that many lumbar backaches, with a

tendency to the deposit of uric acid crystals in the urine, are made better by the administration of alkalis of the urine.

When there is a tendency to myalgia or slight pains in the joints, and a physician is consulted, it is rarely that he orders alkalies without also regulating the diet, prescribing baths and exercise, and the drinking of more water. Consequently, it is doubtless rarely that the alkali alone renders the patient better.

In acute inflammations or irritations of the bladder or urethra alkalies should be administered, and generally with the result of modifying the irritation, the frequency of urination, and the pain.

The advantage derived from administering alkalies in sufficient amount to render the urine alkaline in acute rheumatism has not been completely demonstrated. Whether it is possible with alkalies to prevent or modify the cardiac complications is doubtful.

The salts best suited to render the urine alkaline are the salts of potassium, viz., the acetate, the citrate, and bicarbonate, and of these the citrate is the best, the best tasting and the least likely to cause stomach disturbance. The dose should be sufficient to render the urine alkaline, and should ordinarily be at least 2 grams (30 grains) three or four times a day, and more frequently if needed to accomplish the result aimed at. It may be administered in simple water or in an aromatic water, as:

| R.                      | gm. |        |
|-------------------------|-----|--------|
| Potassii citratis ..... | 40  | or 3ix |
| Aquæ .....              | 200 | fl.ʒvi |

M. et Sig.: Two teaspoonfuls, in water, three times a day, after meals.

There is no advantage in administering the lithium salts either as antidotes to gout, in gouty concretions or in uricacidemia, and large doses of lithia, or small doses long continued, are very sure to cause gastrointestinal indigestion.

Smith recommends the use of the citrate of sodium in the artificial food of infants. He adds 0.05 or 0.10 gram (1 or 2 grains) of the salt to each ounce of milk, and states that the alkali "joins with the caseinogen, displacing the calcium, while the citric acid unites with

the latter base, forming a soluble salt which is absorbed into the circulation." By this method he forms clots that are easy of digestion.

When it is deemed advisable to give the bicarbonate of sodium in dyspepsia Smith advises the addition of a few grains of sodium chlorid to each dose, as "the latter salt has the property not only of aiding metabolism, but also of increasing the vitality and power of resistance of the red corpuscles. It also counteracts the tendency of the bicarbonate to form uric acid concretions."

In acute bronchitis "when the secretion is viscid and thick," Smith suggests the use of the alkalies, either the sodium or potassium salts, as tending "to increase the fluidity of the mucus and thus favor expectoration." He believes that the *Liquor Potassæ*, in small doses, is the best alkali to select for this purpose.

#### LOCAL APPLICATIONS

Smith calls attention to the value of bicarbonate of sodium solutions when applied externally to wounds or other lesions of the skin, such solutions being not only sedative but tending to promote healing.

Alkaline baths in skin diseases are, of course, used frequently to relieve irritation in such skin diseases as "eczema, psoriasis, urticaria, lichen, and prurigo." For this purpose from 5 to 10 ounces of the bicarbonate of sodium are dissolved in an ordinary bath.

For an ulcer that is slow in healing Smith recommends the use of a wash containing 1 gram (15 grains) to 30 c.c. (1 fluid ounce) of water, or a 3.5 per cent. solution. He has "seen large superficial ulcers which have resisted all previous measures begin at once to heal under the use of this simple alkaline dressing."

In whitlow, after the pus has been evacuated, "the bicarbonate of sodium solution, applied on lint under oiled silk, causes the pain and suppuration to disappear with remarkable quickness."

The advantage of the local application to inflamed parts is thought to be due to the raising of the alkalinity of the blood and thus promoting the phagocytic and healing activities of the blood.

Smith recommends the same alkaline wash "for burns, scalds, otorrhea and leucorrhœa, and as a gargle

in inflammations of the throat and tonsils." Also when there are decayed teeth the pain caused by the acid irritations is immediately stopped by the application of the bicarbonate of sodium solutions.

---

## MAGNESIUM OXID

### MAGNESIA, CALCINED MAGNESIA, OR LIGHT MAGNESIA

Magnesium oxid is a light, fine white powder, odorless and practically tasteless. It is insoluble in alcohol and water, but soluble in dilute acids.

It has no local action on the skin other than that of a dusting powder. In the stomach it acts as an antacid, combining and neutralizing any acid that is present, and the resulting combination causes it to act mildly on the bowels as a laxative.

In acidity of the stomach, whether from too much hydrochloric acid or from lactic acid fermentation, it is a valuable antidote, relieving the symptoms of pain, burning, distress and acid eructations almost immediately.

In intestinal indigestion in children, when there is intestinal flatulence and the feces are more or less acid as shown by hyperemia and irritations about the anus, magnesia is good treatment.

Magnesia is a valuable laxative for bottle-fed babies, as it is tasteless and is really administered in milk. A good preparation for this purpose is the milk of magnesia of the National Formulary.

The laxative action of magnesia may be increased by administering it with a little lemon juice or lemonade.

As magnesia forms insoluble compounds with soluble arsenic and mercury salts, it may be used as an antidote in poisoning from these metals, and is specifically recognized in its antidotal action of arsenic poisoning under the name of *Ferri Hydroxidum cum Magnesii Oxido*, U. S. P., i. e., the "arsenic antidote." If more active alkalies are not at hand, magnesia may well be used in poisoning with acids.

As a cathartic magnesia is not sufficiently active to warrant its use, the dose required being disagreeably large. As a gentle laxative, given two or three times a

day, when there is an abnormal acidity of the stomach, it is certainly of advantage.

The dose of magnesia (*magnesii oxidum*) while stated to be 2 grams, is too much powder ordinarily to be taken at one dose, and, as above stated, if a cathartic is needed, other drugs should be used. As a gentle laxative three times a day, from 0.30 to 0.50 gram (from 5 to 10 grains) is often efficient, and if there is hyperacidity of the stomach, it is better given after meals. A good method of administering magnesia is in milk, or in a little effervescing water, as carbonated water or vichy. Of course, magnesia could be put into wafers or kon-seals.

#### OFFICIAL PREPARATIONS

**MAGNESII OXIDUM PONDEROSUM, U. S. P.**, heavy magnesium oxid, or heavy magnesia, is a fine white powder, about three and one-half times as heavy as the light magnesia, and differs from the latter in not readily uniting with water to form the hydroxid. It has no therapeutic advantages over the light magnesia.

**MAGNESII CARBONAS, U. S. P.**, magnesium carbonate, is a light, white, insoluble powder, odorless, and almost tasteless, and may be used as an antacid, but has no advantage over the magnesia. It has almost no laxative properties.

**MAGMA MAGNESIÆ, N. F.**, milk of Magnesia, is a mixture holding 5 per cent. of magnesium hydroxid in suspension. It is an antacid and mildly laxative. The adult dose is from two to three teaspoonfuls. As above stated, it is a useful addition, as a laxative, to the milk of infants, the dose being whatever is found sufficient to produce mild laxative effects.

#### ADMINISTRATION

Magnesia may be administered as follows:

For gastritis with constipation:

| R.                          | gm. |    |       |
|-----------------------------|-----|----|-------|
| Bismuthi subnitratiss ..... | 20  | or | 5v    |
| Magnesii oxidi .....        | 10  |    | 3iiss |

M. et fac chartulas 20.

Sig.: One powder, three times a day, before meals.



If there is hyperacidity of the stomach:

| R.                         | gm. |    |       |
|----------------------------|-----|----|-------|
| Bismuthi subgallatis ..... | 10  |    | 3iiss |
| Magnesiï oxidi .....       | 6   |    | 3iiss |
| Sodii bicarbonatis .....   | 10  | or | 3iiss |

M. et fac chartulas 20.

Sig.: One powder, three times a day, before meals.

Or, if there is much gastric flatulence:

| R.                         | gm. |    |              |
|----------------------------|-----|----|--------------|
| Bismuthi subnitratis ..... | 20  |    | 3v           |
| Magnesiï oxidi .....       | 5   | or |              |
| Carbonis ligni .....       | 5   |    | ãã, gr. lxxv |

M. et fac chartulas 20.

Sig.: One powder three times a day, after meals.

Or:

| R.                       | gm. |    |       |
|--------------------------|-----|----|-------|
| Sodii bicarbonatis ..... | 10  | or | 3iiss |
| Magnesiï oxidi .....     | 6   |    | 3iiss |

M. et fac konseal. 20.

Sig.: A wafer three times a day, after meals.

As a morning laxative:

| R.                   | gm. |    |     |
|----------------------|-----|----|-----|
| Magnesiï oxidi ..... | 15  | or | 3ss |
| Fac chartulas 10.    |     |    |     |

Sig.: One powder, in a glass of lemonade, before breakfast.

# CATHARTICS

---

## GENERAL CONSIDERATIONS

Cathartics may be subdivided into laxatives, purges, salines, and irritants or drastics. The object for which a cathartic is used determines from which class the drug should be selected. The main difference between laxatives, purgatives, salines and irritants is that the members of the first three classes can rarely cause, even in large doses, anything more than free, profuse catharsis. The drugs under the irritant class can cause, sometimes even in small doses, irritation and even inflammation of the intestines, and an actual enteritis.

The indications for the use of a cathartic are: 1, To unload the bowels; 2, to relieve constipation; 3, as an eliminant; 4, to lower blood pressure; 5, to remove edema or exudates.

1. *To Unload the Bowels:* An evacuant should be given to clean out the intestines when there is an irritant in the bowels, as in acute intestinal indigestion; in intestinal colic, and in acute diarrhea. If the patient is seen in the evening the best purgative is, perhaps, calomel, in a dose of from 0.10 to 0.30 gram (2 to 5 grains), followed in the morning by a saline; or if a quicker action is desired, especially if the patient is seen in the daytime, a proper dose of Epsom salt, citrate of magnesium, a seidlitz powder, or a glass of some cathartic mineral water is the best treatment. One of the most valuable of purgatives is castor oil, especially for children. But perhaps there is no better treatment for a complete cleansing of the bowels than a dose of calomel combined with 1 gram of bicarbonate of soda, with the withdrawal of all food for a number of hours, and with a powder of bismuth (bismuthi subnitras) and salol (phenylis salicylas) for a series of doses, as bismuth 1 gram (15 grains) and salol 0.30 gram (5 grains), every two hours, for ten doses. After a longer or shorter interval, from ten to twenty hours, of absti-

nence from food, a bland, corrected diet should be instituted.

Rarely in children with intestinal indigestion small doses of calomel, as from  $1/20$  to  $1/10$  of a grain every hour until there is green purging, is good treatment. The calomel is supposed to have an antiseptic action in the bowels. If a minute portion of it is changed into corrosive sublimate as it passes through the stomach, some antiseptic action occurs. Such chemical change is, however, undesirable on account of causing irritation of the stomach, and nausea and vomiting. These small doses of calomel also cause intestinal irritation and often a troublesome diarrhea, and besides, the cleaning out of the bowels by any such treatment is slow. There is also danger of producing salivation and a good deal of weakness. In other words, much as such treatment is lauded by many clinicians, it is often objectionable, and, generally, if calomel is to be administered it should be given, in the proper dose for the age and condition, to act as quickly and completely as possible.

In obstinate constipation saline cathartics or various combinations of the more active cathartic vegetable drugs are needed. Before giving strong drastic drugs, however, especially such as produce irritation or much peristalsis, a decision must be made that there is no obstruction; in other words, that the condition is not an obstipation. If there is obstruction of any kind, active cathartics will make the condition worse. Reliance, in these conditions, should be on large colon injections of warm water or oil, and if unsuccessful, surgical procedure. It is well to begin the treatment of all acute diseases, especially infections, with a cleaning out of the bowels by means of some simple purge.

The best purges are as follows: Calomel, castor oil, a saline cathartic. The saline cathartics are: Magnesium citrate, magnesium sulphate, potassium and sodium tartrate, seidlitz powder, sodium phosphate, sodium sulphate. Of course, a large dose of any laxative will act as a purge.

2. *To Relieve Constipation*:—In chronic constipation laxatives only should be used; never the strong cathartics or purgatives, and the dose should be just sufficient, with a properly regulated diet, cold morning sponging of the body, abdominal massage, and physical exercises,

such as walking or outdoor games or athletic work, and perhaps abdominal muscular exercises. as, altogether, to cause one good movement of the bowels a day.

If there are hemorrhoids, such drugs as cause pelvic congestion should be avoided. The same is true in pregnancy and in pelvic inflammations. Aloes and rhubarb, unless in small doses and combined with some modifying drug, are perhaps well avoided when these conditions are present. It is sometimes best to give a small dose of a laxative three times a day, after meals instead of once a day, viz., after supper or at bedtime, the object being ordinarily to have a movement of the bowels directly after breakfast, which is the most convenient time and the best time for most people. This method of administering a small dose of a laxative three times a day is most satisfactory with a preparation of *rhamnus purshiana* (*cascara sagrada*).

If a patient has hemorrhoids or rectal pain, it is often a good plan to cause a movement of the bowels just before going to bed, as this precludes the probability of a fecal mass in the rectum causing congestion all night. If there is plethora, liver or kidney insufficiency, or obesity, a saline laxative in the morning before breakfast is the best treatment.

The best drugs to use as laxatives, and perhaps in the order of preference, are as follows: *Cascara sagrada*, aloin, *podophyllum*, rhubarb. Carlsbad salt, other natural spring salts, Rochelle salt, Epsom salt, glauber salt, magnesia, sulphur.

3. *As an Eliminant*:—In all toxemias, uremia, diabetic coma, blood poisonings of all kinds, quickly acting cathartics, as croton oil, elaterium, compound jalap powder, Epsom salt (and the activity is in the order named) are indicated. If a purgative is to be daily repeated, the milder salines should be used.

4. *To Lower Blood Pressure*:—When there is cerebral congestion or pressure (in apoplexy, or when there is danger of it), the purgatives that cause large, watery stools, thus relieving arterial pressure, are indicated. The blood pressure in the head is always less than that of the rest of the system, hence the lower the systemic pressure, the lower that in the head. Saline laxatives are generally the best for this purpose, and should be given concentrated, or, if the action must be as soon as

possible, a drop of croton oil in a little granulated sugar on the tongue is the best treatment.

In advanced arteriosclerosis a daily laxative, combined with a proper regulated diet and such other medication as is indicated, is good treatment.

5. *To Remove Edema or Exudates*:—A purge that causes watery stools is indicated when we wish to remove edemas and exudates. As many such cathartics, notably elaterium, are very depressing to the heart, they should be used with care. A concentrated solution, in proper dose, of one of the saline cathartics, is generally satisfactory, and to reap the most advantage from the action of such a solution the liquids taken should be restricted. Drastic cathartics or irritants are: Colocynth, croton oil, elaterium, gamboge, jalap, scammony.

---

### EUONYMUS

Euonymus or wahoo is the bark of the root of a shrub (sometimes called "spindle tree") of the eastern United States. It contains a bitter resin called euonymin, a crystalline glucoside termed atropurpurin, and citric, malic and tartaric acids. The bitter principle euonymin is supposed to cause the laxative or purgative action of wahoo. Euonymus is a mild laxative, somewhat resembling podophyllum and rhubarb, only its action is weaker. It increases the secretion of the mucous membrane of the bowel, does not ordinarily cause griping, and as it acts but slowly, for laxative effects should be given from twelve to fifteen hours before its action is desired. It has been claimed to have a slight tonic action on the circulation, slight expectorant and diuretic action, and to be a stomachic. None of these activities is of any importance. Some of its active principles are excreted by the kidneys, but probably it is mostly excreted by the intestines.

It is a useful drug in chronic constipation, perhaps especially when the constipation is complicated by dyspepsia and liver insufficiency.

### OFFICIAL PREPARATIONS

EXTRACTUM EUONYMI, which really represents the euonymin of the drug. The dose is about 0.10 gram, or 2 grains.



FLUIDEXTRACTUM EUONYMI, the dose of which is 0.5 c.c., or 8 minims.

#### ADMINISTRATION

This drug is best used in combination, and may be combined with any other laxative to increase its action, as:

| R.                                | gm. |    |         |
|-----------------------------------|-----|----|---------|
| Aloini .....                      | 20  | or | gr. iii |
| Extracti euonymi .....            | 1   |    | gr. xv  |
| Extracti belladonnæ foliorum..... | 20  |    | gr. iii |
| M. et fac pilulas 20.             |     |    |         |
| Sig.: One pill after supper.      |     |    |         |

Or:

| R.                           | gm. |    |         |
|------------------------------|-----|----|---------|
| Aloini .....                 | 10  | or | gr. iss |
| Ipecacuanhæ .....            | 20  |    | gr. iii |
| Extracti euonymi .....       | 1   |    | gr. xv  |
| Resinæ podophylli .....      | 06  |    | gr. i   |
| M. et fac pilulas 20.        |     |    |         |
| Sig.: One pill after supper. |     |    |         |

Or:

| R.                                | gm. |    |             |
|-----------------------------------|-----|----|-------------|
| Euonymini .....                   | 20  | or | gr. iii     |
| Extracti rhamni purshianæ.....    | 3   |    | gr. xlv     |
| Extracti belladonnæ foliorum..... | 15  |    | gr. iiss    |
| Extracti nucis vomicæ.....        | 20  |    |             |
| Oleoresinæ capsici .....          | 20  |    | āā, gr. iii |
| M. et fac pilulas 20.             |     |    |             |
| Sig.: One pill after supper.      |     |    |             |

#### CASCARA SAGRADA

Cascara Sagrada was so named by the Spanish, and means sacred bark. It is official under the name of *Rhamnus Purshiana*, and is the dried bark of a small tree growing on the Pacific Coast.

#### OFFICIAL PREPARATIONS

EXTRACTUM RHAMNI PURSHIANÆ. Dose, about .20 gram (3 grains).

FLUIDEXTRACTUM RHAMNI PURSHIANÆ. Dose, 1 c.c. (15 minims).

FLUIDEXTRACTUM RHAMNI PURSHIANÆ AROMATICUM. Dose, 1 c.c. (15 minims).

The National Formulary furnishes a preparation of *Fluidextractum Rhamni Purshianæ Alkalinum*, which

is a fluidextract of cascara sagrada which is not bitter. Dose, 1 c.c. (15 minims).

All these preparations taste bitter except the last, and the real dose of any one of them is *enough*, the amount depending on its frequency and the results. Many preparations on the market are almost worthless as laxatives, as the bark must be long kept and the preparation carefully made. The liquid preparations are always the most active, and act as slight stimulants to the mucous membrane of the stomach, hence act rather as bitter tonics. The extract is often dried and furnished in tablets which are rendered tasteless by coating. If these tablets are properly made, and contain a good preparation of cascara, they are efficient. If a cascara preparation or cascara tablet produces rectal irritation, there is probably some other ingredient than cascara in it to render it active. As pure cascara is not astringent and not irritant to the bowels, and can cause no irritation or congestion in the pelvis, it is not contraindicated in hemorrhoids or in pregnancy.

It cures constipation perhaps as much by causing a daily movement of the bowels and thus creating a proper intestinal habit as by any curative properties that it may possess. The repeated taking of cascara does not create a tolerance, and generally the dose may be gradually diminished. Hence, in most instances this drug is the best laxative to use in chronic constipation. Whether it is best to give a small dose three times a day or a larger dose once a day, depends on the result of a careful study of the individual patient. After the amount necessary has been determined, week by week this dose may be diminished until finally, by the aid of proper diet, exercise, etc., the constipation becomes cured. No alkaloid has been separated from cascara sagrada, but an active glucosid under the name of cascarin is prepared. Whether this represents all the desirable activities of the crude drug has not been determined.

---

### PODOPHYLLUM OR MAYAPPLE

Podophyllum is the dried rhizome of a perennial herb which grows in the woods of Canada and northern and middle United States, and is sometimes called wild mandrake and umbrella plant. It contains besides

starch, a resin (4 to 5 per cent.), a gum, a fixed oil and gallic acid. The active principle is contained in the resin, and is called podophyllotoxin, to which is due the purgative properties of the drug. The resin also contains podophyllinic acid.

The drug is practically without odor, but has a bitter, acrid taste. It is slightly irritant to the skin, and decidedly so to mucous membranes, and, therefore, is slightly stimulant to the stomach mucous membrane, but acts mostly on the intestinal canal, causing increased peristalsis. Its action is very slow, taking from ten to fifteen hours to cause a movement of the bowels. There may be some griping pains, perhaps accompanied by a little nausea and rarely vomiting. The movements are soft, and if the drug has been taken alone, there may be several. In proper combinations only one good movement a day occurs, making this drug valuable as a laxative. It seems to cause an increased output of bile and, therefore, stimulates the activity of the liver. It also probably reflexly or otherwise stimulates the other digestive organs. As it can cause considerable griping and irritation of the intestines, even to causing blood-stained stools, the drug should not be used as a cathartic. As it seems to be active in the duodenum and a stimulant to the liver, it has been classed as a cholagogue. Its irritant action should class it with the irritant or drastic cathartics, although its best use is in small doses in combination with other mild cathartics as a laxative. Consequently its best use is in chronic constipation.

The most active preparation is the resin, which should be combined with other slow-acting cathartics, as aloes, rhubarb or colocynth. It should not be given with cathartics that act quickly, as it would then either be useless and pass off without any action at all, or would cause irritation of the bowels and movements after the quicker acting cathartic had finished its work. It should be remembered that this drug is an irritant, and consequently should not be administered when there is inflammation of the intestines, and should probably not be given to children. Its overaction has caused death. Besides its combination with other slow-acting cathartics, a drug to control its tendency to cause griping is indicated. In other words, it is well combined with

hyoscyamus or belladonna, and sometimes with an aromatic like ginger or capsicum.

The full dose of the drug itself is 0.5 gram, or  $7\frac{1}{2}$  grains, but as there is occasionally a susceptibility of patients to overaction from this drug, the beginning dose should be smaller than the above. The best preparation is:

**RESINA PODOPHYLLI** (podophyllin), the resin of podophyllum. The laxative dose is 0.005 gram, or  $1/12$  grain.

**FLUIDEXTRACTUM PODOPHYLLI** is the only other official preparation of podophyllum. The laxative dose is 0.25 c.c., or 4 minims.

The *resina podophylli* is an ingredient of the following official and National Formulary pills:

**PILULA CATHARTICA VEGETABILIS**, U. S. P.

**PILULA PODOPHYLLI BELLADONNÆ ET CAPSICI**, U. S. P.

**PILULA ALOES ET PODOPHYLLI COMPOSITA**, N. F.

**PILULA ALOINI COMPOSITA**, N. F.

**PILULA COLOCYNTHIDIS ET PODOPHYLLI**, N. F.

**PILULA LAXATIVÆ POST PARTUM**, N. F.

**PILULA TRIPLICES**, N. F.

The dose of any of these is one pill, increased if deemed advisable.

The *Pilula Podophylli Belladonnæ et Capsici* is the only one of the above that has podophyllum as its only cathartic. The other pills are all in combination with other laxatives or cathartics. The *Pilula Cathartica Vegetabilis* contains besides the resin of podophyllum, compound extract of colocynth (which contains besides colocynth, aloes and scammony), hyoscyamus, jalap and leptandra. The *Pilula Aloes et Podophylli Composita* and the *Pilula Aloini Composita* contain aloes and podophyllum and aloin and podophyllum respectively. The *Pilula Colocynthidis et Podophylli* contains the compound extract of colocynth and the resin of Podophyllum. The *Pilula Laxative Post Partum* contains the compound extract of colocynth, aloes, ipecac, resin of podophyllum, and extract of hyoscyamus. The *Pilula Triplices* contains aloes, mercury and podophyllum.

## ALOE

The official aloes is the inspissated juice obtained from the leaves of various species, and in the crude state occurs as brownish masses. Aloes and all its preparations have a bitter taste.

An active principle called aloin has been obtained from aloes. While aloin is less certain in its effect than the purified aloes, it is still generally satisfactory as a laxative. The purgative principle of aloes is said to reside in a principle called emodin, which is probably set free in the alkaline secretions of the upper intestine. The presence of alkalies seems to be necessary for the activities of this purgative principle, and experience seems to teach that many times combination with iron renders the aloes more effective. If a liquid preparation of aloes were administered before meals, if the amount were small, it would act as a bitter tonic or stomachic. The amount, however, must be small, or it would cause nausea.

Aloes stimulates the activity of the muscular coat of the intestine, thus increasing peristalsis, and this action seems to be principally on the large intestine. The movements that aloes causes are soft and dark colored, and the discharges are ordinarily not watery. Aloes seems to have a predilection for irritating or congesting the rectum, and seems to cause congestion generally of the pelvic organs. For this reason it is generally inadvisable to use aloes as a laxative when there are hemorrhoids, rectal or colon irritations, or inflammation of the pelvic organs, or in pregnancy. Its stimulant action to the mucous membrane of the intestines probably reflexly increases the secretion of the liver and pancreas and probably the intestinal glands. Owing to its tendency to cause irritation sufficient to produce griping, the pain from which is referred to the umbilical region, it is generally inadvisable to use aloes in any form as a cathartic, unless it is in combination with some more active drug.

## ITS USE AS A LAXATIVE

The most important use, then, of aloes is as a laxative, which means a daily dose sufficient to produce one daily movement of the bowels. As the action of aloes is slow, it taking from eight to ten hours or longer to



cause a movement of the bowels, the best time to administer this drug is after supper. With some patients a small dose of aloes or aloin three times a day, after meals, is successful, but generally the one sufficient dose after supper is the best method of treating chronic constipation. As aloes or aloin alone, as above stated, is likely to produce griping for some little time before the bowels are moved, it is generally best to combine the aloes with some drug or drugs that correct such unpleasant action. The most effective drug for this purpose is belladonna, the dose of which should not be large, as there is frequently idiosyncrasy against belladonna, and if one pill or tablet of the combined aloes and belladonna does not produce satisfactory movements, the dose could not be doubled without danger of overaction from the belladonna. A small dose of strychnia added to the aloin pill or tablet is often advisable, as it causes a little more activity of the intestines. It is also often well to add a little ipecac, which also stimulates the upper part of the intestine and the secretion or excretion of bile.

#### OFFICIAL PREPARATIONS

The United States Pharmacopeia recognizes the following preparations of aloes:

**ALOE:** The preparation used is an extract from the leaves of various species of aloes, and contains aloin, a resin, a trace of gallic acid, and a volatile oil to which it owes its odor. The dose is 0.25 gram, or 4 grains. It is, however, best to use:

**ALOE PURIFICATA**, or purified aloes, the dose of which is the same, viz., 0.25 gram, or 4 grains. Purified aloes enters into the composition of the Compound Extract of Colocynth, of which it comprises 50 per cent.; into the Compound Rhubarb Pills, each of which contains 0.10 gram, or  $1\frac{1}{2}$  grains of aloes; and into the Compound Tincture of Benzoin, which contains 2 per cent. of aloes.

**EXTRACTUM ALOES** is a powder, the dose of which is 0.10 gram, or 2 grains.

**TINCTURA ALOES** contains 10 per cent. of aloes, and the dose is 2.5 c.c., or one-half a fluidram or one-half a teaspoonful.

**TINCTURA ALOES ET MYRRHÆ** is known as "Elixir Pro" (Elixir Proprietatis Paracelsi, i. e., a combination which originated with Paracelsus). This tincture con-

tains 10 per cent. of aloes and 10 per cent. of myrrh. The dose is 2.5 c.c., or one-half a fluidram or one-half a teaspoonful.

PILULA ALOES contains 0.13 gram, or 2 grains of purified aloes. The dose is one or two pills.

PILULA ALOES ET FERRI contains 0.065 gram, or 1 grain each of purified aloes and of the dried sulphate of iron. The dose is two pills.

PILULA ALOES ET MASTICHES is known as the "Lady Webster" pill, and contains 0.13 gram, or 2 grains, of purified aloes, and 0.04 gram, or  $\frac{2}{3}$  grain of mastic. The dose is one or two pills.

PILULA ALOES ET MYRRHÆ contains 0.13 gram, or 2 grains, of purified aloes, and 0.065 gram, or 1 grain, of myrrh. The dose is one or two pills.

ALOINUM (Aloin) is the active cathartic principle of aloes, and the dose is 0.02 gram, or  $\frac{1}{3}$  of a grain.

The dose of aloes, or any of its preparations, or its active principle, is always *enough*, and no more than enough to cause one good movement a day.

The Pharmacopeia also recognizes:

PILULA LAXATIVA COMPOSITA, which contains 0.015 gram ( $\frac{1}{4}$  of a grain) of aloin, 0.0005 gram ( $\frac{1}{128}$  of a grain) of strychnin, 0.008 gram ( $\frac{1}{8}$  of a grain) of extract of belladonna leaves, 0.004 gram ( $\frac{1}{16}$  of a grain) of powdered ipecac, and 0.05 gram ( $\frac{3}{4}$  of a grain) of powdered licorice root. The dose is one or two pills.

The National Formulary recognizes:

PILULA LAXATIVA POSTPARTUM (Barker) is a combination the formula of which is as follows:

| R.                                    | gm. or c.c. |                    |
|---------------------------------------|-------------|--------------------|
| Aloes purificatæ .....                | 055         | gr. 5/6            |
| Extracti colocynthidis compositi..... | 11          | gr. $1\frac{2}{3}$ |
| Extracti nucis vomicæ.....            | 025 or      | gr. $5/12$         |
| Pulveris ipecacuanhæ .....            | 005         | gr. $1/12$         |
| Resinæ podophylli .....               | 005         | gr. $1/12$         |
| Extracti hyoseyami .....              | 08          | gr. $1\frac{1}{4}$ |
| M. et fac pilulas.                    |             |                    |

Various combinations of aloin, belladonna, and strychnin may be obtained in tablet triturate form. Many of them contain too little aloin and too much strychnin and belladonna. A happy combination is the following

formula, which contains more aloin and less strychnin and belladonna than generally found in ready-made compound aloin tablets.

| R                     | gm. or c.c. |                   |
|-----------------------|-------------|-------------------|
| Aloini                | 02          | gr. $\frac{1}{3}$ |
| Strychninae sulphatis | 0015        | or gr. 1/40       |
| Ipecacuanhae          | 03          | gr. $\frac{1}{2}$ |
| Extracti belladonnae  | 006         | gr. 1/10          |
| M. et fac tabletam 1. |             |                   |

### SCAMMONY

Scammony is a gum resin obtained from the root of a vine growing in western Asia and in some of the islands of the Mediterranean. It occurs in irregular pieces, varying in size and is of a brownish-black color, although the pieces may be covered with a grayish-white powder. The cut surface has a luster, and thin fragments may be slightly translucent. It has a cheese-like color, and a slightly acrid taste. It contains about 80 per cent. of a glucoside (scammonin, the active principle). This drug was long known to the ancients as a cathartic. Scammony resembles jalap in its action, but stimulates the muscular coat of the intestines more actively, causing, in large doses, violent peristalsis, with griping, nausea and vomiting. It is said not to increase the secretion of the intestinal mucous membrane as much as some others of the vegetable cathartics. The upper part of the intestine is most affected by this drug, and it can cause sufficient irritation to produce inflammation, and in large doses may even cause death. The movements are loose and watery, and in this respect it resembles elaterium. It seems to increase the secretion of the bile, but it is not absorbed, and its action is a local one.

Scammony is not used alone, but in combination with other cathartics, and is one of the many ingredients of the compound cathartic pill. The only possible excuse for the compound cathartic pill is that it combines a series of active vegetable cathartics in small doses; a full cathartic dose of many of the single ingredients would cause too intense an action. As a matter of fact there is no excuse for ever using either scammony or gamboge, as both are too irritant to the mucous membrane of the intestines, and it is hardly justifiable to use even small doses. The only official preparation is:

**RESINA SCAMMONII**, resin of scammony. When powdered this is of a grayish-white color, of the characteristic odor and taste of scammony. The dose is 0.20 gram (3 grains), best administered in pill or capsule. The resin of scammony is said to be identical with the resin of jalap, another proof that scammony is not needed.

This preparation of scammony is an ingredient of the compound extract of colocynth, the extract containing, besides colocynth and scammony, aloes, soap and cardamom. This compound extract of colocynth is also an ingredient of the compound cathartic pill, and we have the medieval polypharmacy and absurdity of an official pill (the compound cathartic pill) which contains colocynth, aloes, scammony, soap, cardamom, calomel, jalap and gamboge. The official vegetable cathartic pill is as absurd; it contains colocynth, aloes, scammony, soap, cardamom, hyoscyamus, jalap, leptandra, podophyllum and peppermint.

It should be remembered that if a laxative drug is needed these active cathartics should not be used, as they cannot be given frequently without causing irritation and inflammation, and when their administration is stopped the constipation is aggravated. On the other hand, if a purgative is needed, one should be selected that will not produce inflammation, and if the ordinary cathartics, as calomel, castor oil or salines, or if desired, a large dose of the simple vegetable cathartics as rhubarb, aloes, or senna, does not give satisfactory results, an irritant, strong cathartic is contraindicated, as there may be obstipation or obstruction, and it could do harm.

---

### **RHEUM—RHUBARB**

Rhubarb is officially the dried rhizome of a plant growing in China or Thibet. The rhubarb cultivated in this country does not seem to possess cathartic qualities. The root or powdered substance has a characteristic aromatic odor, and a bitter, astringent taste, and its cathartic principles may be extracted by water and alcohol. Rhubarb contains, according to Culbreth, about 5 per cent. of chrysophanic acid, emodin, which is the active principle of several vegetable cathartics, two other principles called rhein and rhabarberon, a glucosid, a tannic acid called rheotannic acid, resins, sev-

eral coloring principles, and a varying quantity of rosette-shaped crystals of oxalate of calcium.

If taken into the mouth, although it is somewhat astringent, its bitter taste increases the flow of the saliva, and in small amounts, increases the appetite and improves digestion, acting as a stomachic. In larger doses it causes several loose movements of the bowels, probably due to irritation of the mucous membrane of the intestine, which directly or reflexly through irritation of the nerves increases peristalsis. This increased peristalsis causes the food to pass more rapidly through the intestine, and this carries with it a larger amount of bile than usual, and, therefore, the feces are soft and contain an increased quantity of bile. Rhubarb increases the secretion of the intestinal glands, and probably also of the glands of digestion, and this may also be a cause of the increased intestinal activity. It is a slow-acting drug, and may cause movement of the bowels anywhere from six to twelve hours after its ingestion, depending on the size of the dose, the preparation taken, and the amount of food in the stomach and intestines. If rhubarb is given alone (not combined with other drugs) it generally causes more or less griping. On account of the tannic acid which rhubarb contains, the catharsis from one dose is followed by sufficient astringent action in the intestines to cause future constipation. Hence, unless rhubarb is given to clean out the intestines when there is diarrœa, it is generally inadvisable to give it for constipation unless it is combined with some other laxative drug.

#### ITS EXCRETION

It is excreted with the feces; in the urine, which is slightly increased in amount; in the perspiration, and in the milk. The feces are yellowish-brown or dark brown in color, and the urine of patients taking rhubarb may be of a reddish color. Such urine becomes purplish-red if an alkali is added to it, which proves that the dark color is not due to bile. The milk of nursing mothers may be yellowish in color, have a bitter taste, and a laxative action; therefore, nursing mothers should rarely be given rhubarb. Occasionally after the administration of rhubarb there is an eruption on the skin which, if urticarial in type, is doubtless due to the irri-



tation of the intestinal mucous membrane, but if macular or vesicular, as has at times been noted, is probably due to the irritation it causes during its excretion by the sweat glands.

The ability of rhubarb to cause catharsis and then stop its action and not continue to cause a diarrhea renders it useful to unload the intestines in gastrointestinal disturbances in children. In conditions of indigestion, with sluggishness of the bowels, loss of appetite, and general debility, rhubarb is, perhaps, the best drug to use, as it is a bitter tonic, a stimulant to digestion, and a laxative to the bowels, with a general toning up of the intestines. If castor oil is deemed inadvisable, and the prostrating effect of a dose of calomel is not desirable, in the beginning of the treatment of diarrhea, especially in children, rhubarb makes an efficient cathartic. This drug is also often given in small doses three times a day, in various combinations, to improve digestion and to stimulate the intestines; for this purpose it is often combined with bicarbonate of sodium. As a laxative in the treatment of constipation it is much used, but perhaps best, as previously stated, in combination with other laxative drugs. When there is intestinal indigestion, with too frequent movements of the bowels, with a tendency to a loose movement directly after a meal, small doses of rhubarb, perhaps combined with ipecac and sodium bicarbonate, are effective in correcting the condition. If there is a condition of plethora, or if depletion is desired, or free watery movements, rhubarb is not the cathartic to use. The rhubarb root is furnished in powdered form, and the cathartic dose is 1 gram, or 15 grains.

#### OFFICIAL PREPARATIONS

EXTRACTUM RHEI. Dose, 0.25 gram, or 4 grains.

FLUIDEXTRACTUM RHEI. Dose, 1 c.c., or 15 minims.

MISTURA RHEI ET SODÆ. This rhubarb and soda mixture contains 1.5 per cent. of the fluidextract of rhubarb, 3.5 per cent. of sodium bicarbonate, 0.3 per cent. of fluidextract of ipecac, 35 per cent. of glycerin, and 3.5 per cent. of spirits of peppermint. The dose is 10 c.c., or 2 fluidrams. This is a valuable antacid, stomachic, and mildly laxative preparation.

**PILULÆ RHEI COMPOSITÆ** (compound rhubarb pills). Each pill contains 2 grains of powdered rhubarb,  $1\frac{1}{2}$  grains of aloes, 1 grain of myrrh, and  $1\frac{1}{12}$  grain of oil of peppermint. The dose is one or two pills. This pill makes a good treatment for chronic constipation.

**PULVIS RHEI COMPOSITUS** (Gregory's powder). This contains 25 per cent. of powdered rhubarb, 65 per cent. of magnesium oxid, and 10 per cent. of ginger. The dose is 2 grams, or 30 grains.

**SYRUPUS RHEI**. This contains 10 per cent. of the fluid extract of rhubarb, 0.4 per cent. of the spirit of cinnamon, and 1 per cent. of potassium carbonate. The dose is 10 c.c., or 2 fluidrams.

**SYRUPUS RHEI AROMATICUS**. This contains 15 per cent. of aromatic tincture of rhubarb and 1 per cent. of potassium carbonate. The dose is 10 c.c., or 2 fluidrams.

**TINCTURA RHEI**. This contains, besides 20 per cent. of rhubarb, 4 per cent. of cardamom and 10 per cent. of glycerin. The dose is 5 c.c., or 1 fluidram.

**TINCTURA RHEI AROMATICA**. This contains, besides 20 per cent. of rhubarb, 4 per cent. of cinnamon, 4 per cent. of cloves, 2 per cent. of nutmeg, and 10 per cent. of glycerin. The dose is 2 c.c., or 30 minims.

The National Formulary recognizes the following:

**ELIXIR RHEI.**

**ELIXIR RHEI ET MAGNESII ACETATIS.**

**MISTURA RHEI COMPOSITA.**

**SYRUPUS RHEI ET POTASSII COMPOSITUS.**

**TINCTURA RHEI AQUOSA.**

**TINCTURA RHEI ET GENTIANÆ.**

**TINCTURA RHEI VINOSA.**

The dose of any one of these elegant preparations is 5 c.c., or 1 fluidram, three times a day, after meals, or in larger dose, once a day, for laxative purposes.

**PULVIS RHEI ET MAGNESII ANISATUS.** This powder is carminative and laxative, dose for an infant, 0.30 grams, 5 grains.

---

## JALAP

Jalap is the dried, tuberous root of a climbing vine which grows on the eastern slope of the Mexican Andes, and is also cultivated in India. It is named after

Jalapa, or Xalapa, a city of Mexico. It has a slight smoky odor, and a sweetish and mildly acrid taste. The root yields about 8 per cent. of a resin which consists of jalapin and a glucoside, convolvulin, or jalapurgin.

The purgative action of jalap seems to be induced by the action of the bile, hence it begins its activity in the duodenum. It causes congestion of the mucous membrane of the intestines, probably increases the secretion of the intestinal glands, peristalsis is increased, and profuse, watery discharges are the result. There is often pain, and sometimes griping and vomiting. It seems to be less of an irritant than gamboge, podophyllum or scammony, but excessive doses will produce continuous purging. It causes a movement of the bowels in from three to four hours. It does not cause congestion of the pelvic organs or of the rectum, and is perhaps the mildest of the resinous cathartics. As it cannot be detected in the urine, it is probably not absorbed, and as it is difficult to detect it in the stools, it is evident that is partly or completely oxidized.

Jalap is a very useful cathartic, especially when it is desired to cause absorption of effusions. It is especially indicated for this purpose in ascites and in general anasarca, whether from cardiac insufficiency, renal disease or cirrhosis of the liver. It is also indicated when the brain is to be relieved of a too high blood pressure, or when there is congestion of the brain, in meningitis. It is valuable in hypertension, and is especially useful when there is venous engorgement from failure of the heart in dilatation in valvular disease, or in failure of the right side of the heart from emphysema. When any of these indications are to be met by the use of jalap it should be remembered that the intake of liquids should be restricted, that the profuse watery discharges may so deplete the blood as to cause it to resorb the water that it finds in the tissues or exudates in cases of dropsy, and in cases of venous engorgement from cardiac insufficiency, that it may relieve the heart of excess of fluid so that the hypostatic congestion may be relieved.

#### ITS VALUE IN DROPSY

Jalap is also often the drug selected to increase the excretion of toxins by the intestines in renal insufficiency and when uremia is present or impending. In

this instance, if dropsy is not present, considerable water may perhaps be taken to aid the dilution of the toxins in the blood and to promote the excretion by the skin as well as to increase the watery evacuations by the intestines. In other words, jalap, in three or four hours produces watery stools, causing considerable excretion of toxins from the blood, does not cause much irritation of the intestines, and if the dose is not too frequent, causes but little prostration. Its taste is not unpleasant, and, therefore, it rarely disturbs the stomach, and for this reason is often selected as a purgative in connection with anthelmintics when such are needed to remove intestinal worms in children.

The preparation of jalap most frequently used is:

**PULVIS JALAPÆ COMPOSITUS**, U. S. P., the compound powder of jalap, which contains 35 per cent. of jalap and 65 per cent. of potassium bitartrate (cream of tartar). The adult dose is 2 grams (30 grains). This may be repeated in five hours if there are no results. When necessary, this preparation may be given every morning for several days without causing prostration or intestinal irritation.

**RESINA JALAPÆ**, U. S. P., the resin of jalap, occurs in yellowish-brown masses or fragments, the fresh fracture appearing glossy and semitranslucent at the edges. When pulverized it is a yellowish-gray or yellowish-brown powder. It has a slight smoky odor and a somewhat acrid taste. The dose is 0.10 gram (2 grains). This preparation is an ingredient of the compound cathartic pill and of the vegetable cathartic pill, each of which contains 0.02 gram of this resin.

The National Formulary recognizes three preparations of jalap, viz.:

**FLUIDEXTRACTUM JALAPÆ**, dose 1 c.c., or 15 minims.

**TINCTURA JALAPÆ** (20 grams of jalap in 100 c.c.), dose 5 c.c. (1 fluidram, a teaspoonful).

**TINCTURA JALAPÆ COMPOSITA** contains in each 4 c.c. (1 fluidram) 0.50 gram (7½ grains) of jalap and 0.13 gram (2 grains) of scammony. The dose is a teaspoonful.

These tinctures or alcoholic extracts of jalap do not quite represent the whole activities of the drug, as part of the activities are extracted only by water. The alco-

holic extracts are said to be more griping than the aqueous extracts.

℞  
Pulveris jalapæ compositi..... 10| gm. or ʒiiss  
Fac chartulas 5.

Sig.: One powder, with water, and repeated in five hours, if needed.

Or:

℞  
Pulveris jalapæ compositi..... 5| gm. or gr. lxxv  
Hydrargyri chloridi mitis..... 1| gr. xv  
M. et fac chartulas 5.

Sig.: One powder, with water, and repeated in five hours, if needed.

Or:

℞  
Pulveris jalapæ compositi..... 10| gm. or ʒiiss  
Potassii et sodii tartratis..... 50| ʒii  
M. et fac chartulas 10.

Sig.: A powder, with water, daily, before breakfast.

### GAMBOGE

Gamboge is the dried gum resin obtained from a tree growing in Asia.. It is orange red (when powdered, a bright yellow color), waxy, somewhat porous, without odor, and of an acrid taste. This preparation consists of a gum and a resin (gambogic acid about 70 per cent.), and a volatile oil. It is soluble in water and alcohol.

Gamboge is a very strong cathartic, resembling elaterium, only less active. It stimulates the muscular coat of the intestine, causing active peristalsis, and increases the secretion of the intestinal glands, but does not increase the amount of bile. The movements caused by it are large, soft and watery, and if the dose is large or not modified by some accompanying drug, there is considerable pain and griping, and there may be vomiting. Although it acts principally locally, and, therefore, is mostly excreted by the bowel, some of it is absorbed and acts as a diuretic, and it may at times render the urine yellow. On account of the griping that it causes it is rarely used alone, but is combined with other cathartics. The only official use that it has is as a part of



the compound cathartic pill, each of these pills containing 0.015 gram ( $\frac{1}{4}$  grain).

Though gamboge has been used in cardiac dropsy, as an anthelmintic and as an active cathartic, there is no good reason why it should ever be used or should be made official. All that it can do medicinally can be done better by elaterium.

If it is desired to administer it, the dose is 0.15 gram (2 grains) of the powder.

---

### CROTON OIL

Oleum tiglii, U. S. P. (genitive. olei tiglii), is a yellow, somewhat viscid, fixed oil, expressed from the seeds of the fruit of a small tree which grows in Southern Asia and the Philippine Islands. The seeds contain from 30 to 40 per cent. of this oil. The oil contains glycerides of various fatty acids, crotonol (the vesicating croton resin), and crotonolic (or crotonoleic) acid (closely allied to oleic and ricinoleic acid). The croton resin is soluble in alcohol.

Croton oil is burning and acrid in taste, and an irritant to the skin and mucous membranes. On the skin it produces redness, papules passing into vesicles, and finally into pustules, which in healing leave white scars. Croton oil has been classed, for this action on the skin, as a "pustulent." Occasionally it may cause a general eruption resembling smallpox. Sometimes enough has been absorbed from the skin to cause purging.

### INTERNALLY

When taken internally, unless very dilute, it is irritant to the stomach and intestines. It congests the mucous membrane of the intestines and increases peristalsis, causing copious stools accompanied by griping pains and a good deal of burning and irritation of the rectum and anus. It acts rapidly, a drop or two on the tongue causing a stool in one or two hours.

Large doses cause violent purging, griping, vomiting and collapse, and a few drops have been known to cause death. If it has been taken by mistake, a quickly acting emetic is indicated, with later mucilaginous, soothing drinks and a hypodermatic dose of morphin. If it has

been in the stomach long enough to cause severe purging, the treatment is that of acute enteritis, and the collapse should be treated as usual, with external heat and cardiac stimulants.

Croton oil is used when a quickly acting cathartic is indicated, especially when there is difficulty in causing the patient to swallow, and a rectal injection of a cathartic is inefficient or too slow. Consequently, croton oil is used in uremia and in the coma of apoplexy where it is deemed advisable to reduce the blood pressure by purgation. It has been used in the constipation of lead poisoning and in other obstinate constipation, but it should be used with great care lest intestinal obstruction be present. It may be used at times in the constipation of maniacal patients who refuse to take other medicine, as the dose of this is so small it can be more readily administered.

#### EXTERNALLY

Croton oil may be used externally as a counterirritant, and has been used for this purpose on the chest in various conditions, such as bronchitis, the dry pleurisies of phthisis, and as a counterirritant over the course of a painful nerve. However, it is now rarely used externally, other counterirritants being better and their activities being better controlled. To do any good, croton oil must be used in considerable strength, and then the pustulations are rather beyond control and the scars caused by such pustulation are objectionable. If it is used externally it should be diluted with two or three parts of a bland oil.

The dose of croton oil is one or two drops, and is well administered in a bread pill, made at the time, if the patient is able to swallow. If the patient can not swallow, a drop or two may be put on a little granulated sugar and this put into the patient's mouth, or, if necessary, a single drop may be placed on the back of the tongue. In conditions in which it is indicated a drop may be repeated every hour for several doses until purging takes place. It will rarely take more than two or three doses. Minute doses of croton oil are sometimes added to laxative pills to make them more active. This is inadvisable, however, as the tendency, as previously

stated, of irritant cathartics to either cause inflammation of the intestines or at least increase the tendency to constipation should preclude their use.

Croton oil should not be administered to children, to debilitated patients, or to pregnant women except in desperate cases of uremic poisoning. Also gastrointestinal inflammation or peritonitis should prohibit its use.

---

### ELATERIN

Elaterin is a neutral, active principle obtained from the juice of the fruit (a cucumber-like affair) of a trailing vine which grows in the countries around the Mediterranean Sea. One hundred of these cucumbers yield only a gram (15 grains) of elaterin, and it takes about eighty pounds of them to produce thirty grams (an ounce). Elaterium, or the dried juice of the cucumber, occurs in small, grayish fragments or masses, and has a tea-like odor and an acrid taste. Owing to its adulteration and variation in strength the elaterium as such is not now recognized in the Pharmacopeia, but its active principle, elaterin, is extracted, of which the juice contains from 25 to 35 per cent. Elaterin occurs in small white scales or crystals, is of acrid bitter taste, is without odor, is insoluble in water, and but slightly soluble in alcohol.

### ITS ACTION

It is irritant to the skin and mucous membranes, and frequently causes ulceration of the fingers and eyes of those working with it. Internally its action resembles that of colocynth, but it is far more powerful. In small doses it acts as a stimulant to the gastrointestinal mucosa, increasing its secretion. It is also a stimulant to the pancreas and liver, perhaps reflexly. In larger doses it is irritant to the intestine, producing profuse watery stools, usually accompanied with griping and nausea, and occasionally with vomiting. Elaterium is one of the most powerful hydragogue cathartics, and large doses can produce dangerous prostration and even death. Elaterin acts when used hypodermatically, but is much more efficient when given by the mouth, as the bile seems to render it more active.

## INDICATIONS

Elaterium is indicated when it is advisable to produce profuse serous discharges from the intestines, and has been used for many years in dropsies. It is especially valuable when there is effusion in the serous membrane cavities (pericardial, pleural and peritoneal cavities), and it also is often used successfully when there is general anasarca. Frequently diuretics will not act efficiently until free watery catharsis has relieved the pressure from exudates. Whenever this drug or any other is used to relieve dropsies it must be remembered that the intake of water in any form must be diminished. Elaterium has long been used in uremic conditions, whether there is dropsy or not, and it has often seemed that it relieved cerebral symptoms better than other hydragogue cathartics. It has been thought that it caused the elimination by the intestines of more of the products of metabolism, that the kidneys could not excrete, than any other cathartic. It has also been used to relieve cerebral and pulmonary congestions, acting as a revulsant. However, in cerebral congestion a quicker acting drug, as croton oil, is often better, and in dangerous acute pulmonary congestion any quickly hydragogue cathartic, as magnesium sulphate, will act as well, or better still, venesection as indicated.

The contraindications to the use of the elaterium are, gastric or intestinal inflammation, extreme exhaustion, any weak heart condition, and pregnancy. Unlike the action of croton oil, and unlike the action of the saline cathartics, after the movements of the bowels begin they tend to keep up, causing a large drain of water from the system, which becomes very depressing, and sometimes can be stopped only by the hypodermatic use of morphin with atropin. This undesired action of elaterium prevents its frequent use.

## ADMINISTRATION

The dose of elaterin is from 0.003 to 0.006 grams (from 1/20 to 1/10 grain), and it may be repeated once or twice at five-hour intervals, depending on the results.

TRITURATIO ELATERINI is the only official preparation of elaterin, and contains 10 per cent. of the drug. The dose is 0.03 gram ( $1\frac{1}{2}$  grain).

It is not wise to use claterin every day or even every second or third day, as it causes prostration and may cause intestinal inflammation. Consequently, if watery catharsis is desired daily, some saline cathartic should be selected.

---

### COLOCYNTH

*Colocynthis*, U. S. P. (genitive, *colocynthidis*), is the peeled, dried fruit of a climbing vine which grows in the Eastern Hemisphere. It is also called bitter apple, or bitter cucumber, as the fruit resembles a small orange or gourd. The part of the fruit used for medicinal preparations is the pulp, the seeds of the fruit being discarded. The pulp contains about 0.6 per cent. of an amorphous glucoside, colocynthin, which is the active principle. The taste of colocynth is bitter, and its active principle is soluble in water and alcohol.

In small doses it increases the flow of saliva, and may act as a stomachic, but in larger doses it is irritant to mucous membranes and may cause vomiting. It increases the intestinal secretions and stimulates peristalsis, causing copious watery movements, and if the dose is large it causes severe colic. A large dose may cause gastroenteritis, with bloody stools, and by its irritation may indirectly cause abortion, as may the other irritant cathartics. It may act as an hepatic stimulant, and has been said to have slight diuretic action, showing that some of it may be absorbed.

This drug is rarely prescribed alone on account of its irritant properties, it being better to use a small dose of it combined with other cathartics than a large dose. Colocynth in such small doses has long been used in habitual obstinate constipation, and perhaps most frequently as the compound extract. It should be avoided in all conditions of gastrointestinal inflammation, peritoneal inflammations, and in pregnancy.

There is probably no real good reason for the administration of colocynth. As previously stated in this discussion of cathartic drugs, when an active purge is needed drugs other than the drastic cathartics are better and safer. In chronic constipation even small doses of the irritant cathartics tend to make the condition



worse; they are certainly not curative. If vegetable cathartics are desired to produce large watery stools jalap or elaterium are the best drugs to use.

#### OFFICIAL PREPARATIONS

EXTRACTUM COLOCYNTHIDIS, extract of colocynth. Dose, 0.03 gram ( $\frac{1}{2}$  grain).

EXTRACTUM COLOCYNTHIDIS COMPOSITUM, compound extract of colocynth. This is composed of 16 per cent. of extract of colocynth, 50 per cent. of purified aloes, 6 per cent. of cardamom, 14 per cent. of resin of scammony and 14 per cent. of soap. The dose is 0.50 gram ( $7\frac{1}{2}$  grains). This preparation is an ingredient of the compound cathartic pill, and of the compound vegetable pill. Colocynth is also an ingredient of several National Formulary pills.

# ANTISEPTICS

---

## SALICYLIC ACID

Salicylic acid may be classed as an antiseptic, as a bowel antiseptic and as a "specific" in acute inflammatory rheumatism or acute arthritis. As a local antiseptic it is valuable, but too expensive for extensive use. Its greatest value as a local antiseptic is in powders and ointments. Salicylic acid in some form represents, perhaps, the best bowel antiseptic that can be administered. For this purpose some combination of it or some salt of it which does not break up and become absorbed as quickly as does salicylic acid or sodium salicylate is better. The antiseptic action then extends farther down the small intestine.

## INTESTINAL ANTISEPTIC

While, on the one hand, it is absurd even to consider the possibility of rendering the intestinal canal aseptic, it is just as absurd to believe that some form of salicylic acid can not render the upper part of the intestine less likely to become the abode of bacteria, because such would not be the fact. In other words, it is certainly possible and is clinically easily demonstrated that fermentation and putrefaction in the intestine may be diminished by the administration of a salt of salicylic acid, as represented by salol or phenylis salicylas. It is well recognized that the normal hydrochloric acid of the stomach tends to inhibit fermentation, not only in the stomach, but in the upper part of the intestine. It is also recognized that, while normally bile is not a germicide, it does inhibit putrefaction in the intestine. Salicylic acid has the same power, and perhaps much more in acting as a bowel antiseptic. It may be able not only to prevent typhoid and other germs, especially the colon bacillus, from migrating to the upper part of the intestine, but after absorption it may be able to prevent these germs from coming to the upper part of the intestine, gall bladder, etc., by the lymph and blood streams.

At any rate, it is a common and every-day demonstration that diarrheal disturbances, not chronic, but due to an acute infection or to poisonous articles of food, are stopped and prevented by salicylic acid in the form of phenylis salicylas.

Another advantage of phenylis salicylas is that it does not disturb the stomach, not being broken up there into its component parts of phenol and salicylic acid. i. e., not under ordinary conditions, it being only so decomposed in alkaline media.

Salicylic acid seems to have some stimulant action on the liver, and it is thought that more and better bile is excreted under its action.

It is somewhat irritant to the mucous membranes, and for this reason may cause nausea or vomiting and a reflex urticaria.

The signs of its full action are known as "salicylism" and are not unlike "cinchonism," i. e., there is a fulness of the head, perhaps headache, ringing of the ears and sometimes dizziness. With ordinary doses of a pure, natural product, i. e., preparations made from plants and not synthetically, the heart and circulation are not disturbed, although the surface blood vessels are dilated, and thus there is caused an increased perspiration. If salicylic acid is too long administered, by its power to increase nitrogen waste, impaired nutrition occurs, and debility is caused. The patient also may become anemic, with a tendency to hemorrhages and bleeding from the mucous membranes. Therefore, salicylic acid in any form should not be administered in any dosage but minute for longer than two weeks at a time as the outside limit. Many a patient has had a protracted invalidism following a rheumatic fever because salicylates were administered too long.

The specific action of salicylates in acute inflammatory rheumatism may be due to its bowel antiseptic action, to its antiseptic action on the blood (and rheumatic fever is doubtless a germ disease, and perhaps caused by several germs), or to the increased elimination of waste products which it causes, or it may act for good in all these ways.

#### INTERNAL ADMINISTRATION.

The ordinary dose of salicylic acid and of sodium salicylate are the same, as the former is less soluble than

the latter, although the latter is naturally the weaker preparation. The adult dose in rheumatic fever is a gram (15 grains) of either of these preparations, administered four times in twenty-four hours, or for a few doses, perhaps, at four-hour intervals. Symptoms of "salicylism" occurring should cause the frequency or the size of the dose to be decreased. If an acute arthritis is not improved in four or five days, and certainly in a week, the salicylic acid should ordinarily be stopped. If there is improvement it may be continued in smaller doses, two or three times in twenty-four hours, for a longer period.

As the drug is very sweet, it is absurd in administering it to add any sweet preparation to disguise it, and generally the simplest method of administering a drug is the best. If the dose to be administered is very small, from 0.01 to 0.25 gram (from 2 to 4 grains) it may occasionally be given in capsule form, but in that case it must be given after a meal, as when it begins to dissolve it may cause considerable gastric pain and even vomiting. This might be prevented by a combination with bismuth, as:

|                             |     |              |
|-----------------------------|-----|--------------|
| R.                          | gm. |              |
| Sodii salicylatis,          |     | or           |
| Bismuthi subnitrat. āā..... | 5   | āā. gr. lxxv |
| M. et fac capsulas, 20.     |     |              |

Sig.: One capsule, three times a day, after meals.

If given in liquid form, which is the best way, the following is not especially unpleasant:

|                        |             |       |
|------------------------|-------------|-------|
| R.                     | gm. or c.c. |       |
| Sodii salicylatis..... | 20          | or 3v |
| Aquæ gaultheriæ .....  | 100         | fl̄iv |

M. et sig.: A teaspoonful, with plenty of water, every six hours.

This could also be administered in some sparkling water.

A nascent sodium salicylate is sometimes deemed advisable as follows:

|                             |     |        |
|-----------------------------|-----|--------|
| R.                          | gm. |        |
| Acidi salicyli,             |     | or     |
| Sodii bicarbonatis. āā..... | 20  | āā, 3v |
| M. et fac chartulas, 20.    |     |        |

Sig.: A powder, in a glass of water, every four hours. To drink as effervescence is about completed.

The oil of wintergreen may be used in place of the salicylic acid, if desired. The dose is 1 c.c., or 15

minims. It may be obtained in elastic capsules and thus administered, but should not be taken on an empty stomach. This preparation is sometimes rubbed into joints or applied on cotton to the affected parts.

Methylis salicylas, methyl salicylate, an artificial or synthetic oil of wintergreen, is also used externally as a liniment in rheumatic conditions.

### SALOL

Salol, or phenylis salicylas, ordinarily should not be used in rheumatic fever. It should also not be used when there is any kidney disturbance, as the phenol part of the preparation can cause kidney irritation. Salol should also rarely be used in very large doses, or too long, or in large doses too frequently, as it can cause the urine to become dark, indicating phenol poisoning, and may even cause hemoglobinuria and other symptoms of phenol poisoning. The best use of salol is as a bowel antiseptic, for which it may be given in doses of 0.50 gram (7½ grains) repeated two or three times, or doses of 0.30 gram (5 grains) repeated a series of times, or a still smaller dose repeated a number of days.

Salol is also much used in specific urethritis, and is valuable in certain forms of cystitis and pyelitis. As a bowel antiseptic:

| R.                         | gm. |    |     |
|----------------------------|-----|----|-----|
| Phenylis salicylatis ..... | 2   | or | 3ss |
| Bismuthi subnitratis ..... | 4   |    | 3i  |

M. et fac chartulas, 4.

Sig.: One powder every three hours.

Or,

| R.                         | gm. |    |         |
|----------------------------|-----|----|---------|
| Phenylis salicylatis ..... | 3   | or | gr. xlv |
| Bismuthi subnitratis ..... | 10  |    | 3iiss   |

M. et fac chartulas, 10.

Sig.: One powder every two hours.

For gonorrhea:

| R.                         | gm. |    |          |
|----------------------------|-----|----|----------|
| Phenylis salicylatis ..... | 5   | or | gr. lxxv |
| Fac capsulas, 20.          |     |    |          |

Sig.: One capsule every four hours.

In typhoid fever:

| R.                         | gm. |    |    |
|----------------------------|-----|----|----|
| Phenylis salicylatis ..... | 4   | or | 3i |
| Fac capsulas, 20.          |     |    |    |

Sig.: One capsule every six hours.



## EXTERNAL USES

The oil of wintergreen is often used externally in rheumatic conditions, but the methyl salicylate is probably as valuable and much cheaper. Either may be used undiluted, applied to the affected joint on absorbent cotton, or a little may be rubbed into the joint, or they may be diluted, as:

| R.                         | gm. or c.c. |            |
|----------------------------|-------------|------------|
| Methylis salicylatis ..... | 10          | or flʒiiss |
| Petrolati .....            | 25          | 3iv        |

M. et sig.: Use externally as directed.

Or the methyl salicylate may be used as a liniment, as:

| R.                         | c.c. |           |
|----------------------------|------|-----------|
| Methylis salicylatis ..... | 50   | or        |
| Linimenti saponis, ad..... | 100  | āā, flʒii |

M. et sig.: Use externally as directed.

Or,

|                                |     |           |
|--------------------------------|-----|-----------|
| Methylis salicylatis .....     | 50  | or        |
| Linimenti chloroformi, ad..... | 100 | āā, flʒii |

M. et sig.: Use externally as directed.

Shoemaker suggests the following three prescriptions for profuse or fetid perspiration:

| R.                         | gm. |          |
|----------------------------|-----|----------|
| Acidi salicylici .....     | 10  | or 3iiss |
| Bismuthi subnitratis ..... | 15  | 3iv      |
| Zinci oleatis .....        | 10  | 3iiss    |

M. et sig.: Use on the parts affected.

For eczema with fissures:

| R.                                | gm. |          |
|-----------------------------------|-----|----------|
| Acidi salicylici .....            | 3   | gr. xlv  |
| Betanaphtholis .....              | 50  | gr. vii  |
| Unguenti hydrargyri nitratis..... | 10  | or 3iiss |
| Unguenti zinci oxidi .....        | 20  | 3v       |

M. et sig.: Use externally as directed.

For dry eczematous patches on the skin:

| R.                        | gm. |           |
|---------------------------|-----|-----------|
| Acidi salicylici .....    | 2   | 3ss       |
| Bismuthi subnitratis,     |     | or        |
| Amyli, āā .....           | 10  | āā, 3iiss |
| Adipis lanæ hydrosi ..... | 30  | 3i        |

M. et sig.: Use externally as directed.

The following may be used for pruritus:

| R.                        | gm. |          |
|---------------------------|-----|----------|
| Zinci oxidi .....         | 5   | 3iiss    |
| Phenolis liquefacti ..... | 25  | or m. iv |
| Acidi salicylici .....    | 50  | gr. vii  |
| Petrolati albi .....      | 30  | 3i       |

M. et sig.: Use externally as directed.

The following may be used for profuse, oily secretion of the skin:

| R.                        | gm. |    |        |
|---------------------------|-----|----|--------|
| Acidi salicylici .....    | 1   |    | gr. xv |
| Olei olivæ .....          | 15  | or | fl℥ss  |
| Adipis lanæ hydrosi ..... | 20  |    | 3v     |
| Aquæ rosæ .....           | 25  |    | fl℥vi  |

M. et sig.: Use externally as directed.

### GUAIACOL

Guaiacol is a methyl ether of pyrocatechin and is a constituent of creosote, which is a wood tar. Its action on the system is similar to carbolic acid or phenol, but is perhaps even more poisonous. It is, then, a depressant drug, depressing the nervous system and the circulation, and is excreted by the kidneys in combination with sulphuric and glycuronic acids. It is quickly absorbed from the skin, causing a fall of temperature which is really a symptom of its poisonous action, hence the greater the fall of temperature the more severe and intense its action. With this fall of temperature there is often circulatory weakness combined with perspiration. Although when applied to the skin, even in such small quantities as from 10 to 20 drops, the temperature will be reduced, its action has been found so intense in many instances as to cause it not to be much used as an antipyretic.

### RESORCINOL

The *New York Medical Journal*, Feb. 8, 1908, gives the following suggestions for combinations of resorcin which are quoted from *La Presse Médicale*, Jan. 11, 1908. The following is recommended "for follicular eczema, resorcin in seborrhea of the scalp, resorcin in pityriasis, etc.:"

| R.                        | gm. |    |        |
|---------------------------|-----|----|--------|
| Resorcinolis .....        | 1   | or | gr. xv |
| Adipis lanæ hydrosi ..... | 25  |    | 3vi    |

M. et Sig.: Apply to the diseased part at night, and wash off with soap and water in the morning.

Another combination of resorcin is ascribed to Sabouraud, as:

| R.                          | gm. |               |
|-----------------------------|-----|---------------|
| Resorcinolis .....          | 1   |               |
| Ichthyolis .....            | 1   |               |
| Sulphuris præcipitati ..... | 1   | or añ. gr. xv |
| Olei cadini .....           | 5   | 3i            |
| Adipis lææ hydrosi .....    | 30  | 3i            |

M. et Sig.: Use externally as directed.

This preparation is much stronger, and should not remain too long in contact with the skin.

Unna's exfoliative resorcin paste is as follows:

| R.                      | gm. |             |
|-------------------------|-----|-------------|
| Resorcinolis .....      | 20  | 3v          |
| Zinci oxidi .....       | 5   | or gr. lxxv |
| Kaolini .....           | 1   | gr. xv      |
| Adipis benzoinati ..... | 30  | 3i          |

M. et Sig.: Use externally as directed.

This paste should be allowed to remain in contact with the skin but a few minutes only.

The properties of resorcin are more or less antiseptic and stimulant, and it causes an exfoliation of the epithelial layers of the skin. When the part of the skin to be treated is protected by horny layers or protruding growths, these should be first scraped off with a bistoury or curette; then the resorcin may be applied as follows:

| R.                 | gm. or c.c. |          |
|--------------------|-------------|----------|
| Resorcinolis ..... | 10          | or 3iiss |
| Glycerini .....    | 100         | fl3iii   |

M. et Sig.: Use externally.

Or the resorcin may be applied in powder, as:

| R.                         | gm. |             |
|----------------------------|-----|-------------|
| Resorcinolis .....         | 1   | gr. xv      |
| Bismuthi subnitratis ..... | 5   | or gr. lxxv |
| Talei purifaciti .....     | 40  | 3x          |

M. et Sig.: Use externally.

Or it may be advisable for certain parts of the body to use resorcin in collodion, as:

| R.                      | gm. or c.c. |            |
|-------------------------|-------------|------------|
| Resorcinolis .....      | 2           | fl3v       |
| Collodii flexilis ..... | 20          | or gr. xxx |

M. et Sig.: Use externally as directed.

## IODIN

Dr. W. T. Dannreuther, of New York (*Medical Record*, Jan. 25, 1908), calls attention to the surgical value of iodine. He finds it "of high germicidal potency and one of the most valuable antiseptics in our armamen-

tarium, and endowed with remarkable penetrating power." He calls attention to the fact that iodoform, though containing 96 per cent. of iodine, is not a germicide, although used so many times as a drier in surgical dressings. He has also seen several cases of iodoform poisoning from its surgical use. [Certain it is that, except possibly in tuberculosis of bones or tendons, where an oily mixture of iodoform may be injected directly into the diseased tissue, the obnoxious and unnecessary odor of iodoform is an insult to humanity that should not be perpetrated in any private family, and hardly in a public institution. The fact that many other more efficient and harmless antiseptic powders may be used in surgical dressings precludes the necessity of using iodoform. The sprinkling of iodoform over operation areas seems to partake of the oblique line over the symbol  $\mathcal{R}$ , the abbreviation for recipe, i. e., an appeal to the gods that the operation will be successful and the patient get well.—Ed.]

The various other iodine-bearing compounds of varying strength have been found by Dannreuther not to be so efficient in germicidal activities as the freshly prepared tincture of iodine. The amount of the tincture of iodine used should be "enough and not too much," the amount depending on the part to which the iodine is to be applied, mucous membranes and granulation tissues not receiving so much of the iodine as the unbroken skin. He has found very useful "a watery solution of iodine made by adding 4 c.c. (1 dram) of tincture of iodine to 1,000 c.c. (1 quart) of water."

#### THERAPEUTICS

Dannreuther describes the well-known action of iodine as a counter-irritant on the unbroken skin. He finds it of great value in scalp wounds. After shaving, he thoroughly washes with green soap and water and makes the part as clean as possible. He then injects the tincture of iodine directly into the wound with an ordinary medicine dropper. The sutures are then introduced and a wet gauze dressing applied, which dressing must be kept constantly wet. "Scalp wounds so treated heal by primary union."

He treats erysipelas by painting the region of efflorescence and a wide border of the healthy skin with the

tincture of iodine, and in no case has he seen an extension of the erysipelatous rash.

He finds iodine of value in stimulating sluggish granulations in indolent ulcers, applying the tincture directly to the granulation tissue. In gangrenous ulcers he finds that the iodine will limit the process and hasten the sloughing, and prevent the disagreeable odor.

In preparation for surgical operations he advises, after the hands are cleansed with green soap and water, immersion in a 1 per cent. watery solution of iodine and potassium iodide. During the operation the hands may be frequently dipped into a basin containing this solution. Such a solution has been found to render the hands sterile in thirty seconds. Any after-staining of the skin may be readily removed by ammonia water.

The tincture of iodine is efficient as a disinfectant of the skin before laparotomy incisions, especially in the region of the umbilicus, and one application with a camel's hair brush is all that is necessary. Goelet, of New York, is quoted as using a watery solution of iodine (a fluidram of the tincture to a quart of water) "for irrigating the abdominal wound after closing the peritoneum," believing that this is an efficient antiseptic for this purpose.

Dannreuther also suggests vaginal tampons dipped in 1 fluidram of the tincture of iodine to 4 ounces of glycerin, as a valuable counter-irritant in pelvic inflammations. He also advises before curettage for endometritis an intrauterine douche of a watery solution (1 fluidram of the tincture of iodine to a quart of water) as "limiting the oozing, contracting the muscular fibers, and rendering the uterine cavity sterile." After curettage for abortion, he frequently swabs out the uterus with the full strength of the tincture. Should the abortion be septic, he uses an iodine intrauterine douche three times a day.

---

## ALCOHOL

A most efficient antiseptic wet dressing, poultice and cold pack may be made in the following manner:

Soak a sufficient amount of gauze in one part of alcohol to three parts of water. Apply to the part to be treated thoroughly wet, just short of dripping, cover with rubber tissue, and bind firmly with a bandage.



Such an application many times takes the place of an ice bag in reducing swellings from contusions, sprains, or acute inflammation, and, on the other hand, will hasten the suppuration of a boil or abscess that cannot be aborted as well as the old flaxseed poultice. After the abscess has been opened the corrosive sublimate dressings are, of course, more antiseptic, but are more likely to irritate the surrounding skin, unless the solution is very weak.

This alcohol dressing should be changed, or at least resoaked, every twelve hours. If the bandage is put on tightly so that no air gets under the rubber tissue, the dressing becomes a warm one, acting like a poultice. If the bandage is put on more loosely so that air gets under the rubber tissue, allowing the alcoholic solution to evaporate slowly, the dressing is a cold one, acting like an ice bag.

---

### PULVIS ANTISEPTICUS, N. F.

#### SOLUBLE ANTISEPTIC POWDER

It contains:

|                              |        |
|------------------------------|--------|
| Phenol (carbolic acid) ..... | .10    |
| Eucalyptol .....             | .10    |
| Menthol .....                | .10    |
| Thymol .....                 | .10    |
| Salicylic acid .....         | .50    |
| Zinc sulphate .....          | 12.50  |
| Boric acid .....             | 86.60  |
|                              | <hr/>  |
|                              | 100.00 |

This may be used as a dry dressing wherever a dry antiseptic powder is required. Its solubility in water is about that of boric acid, viz., 4 or 5 per cent., making a saturated solution. Weaker solutions may be made, if the physician desires, for douches and washes.

This non-poisonous, antiseptic, mildly astringent National Formulary powder renders similar proprietary preparations superfluous.

## MISCELLANEOUS

### SPRAY TO DISINFECT SICK-ROOM (NEFF)

| R.                              | gm. or c.c. |          |
|---------------------------------|-------------|----------|
| Guaiacolis                      |             |          |
| Eucalyptolis, āā                | 10          | flʒii    |
| Mentholis                       | 5           | or ʒi    |
| Thymolis                        | 2           | ʒss      |
| Olei gaultheriæ                 | 30          | flʒvii   |
| Olei menthæ piperitæ            | ad 75       | ad flʒii |
| M. et Sig.: Use in an atomizer. |             |          |

### BATH POWDER

As many esthetic persons delight in the pleasure of an effervescing perfumed powder added to the bath, the following from the *Druggists Circular*, October, 1908, seems to be a pleasant suggestion for such a powder:

|                    |            |
|--------------------|------------|
| Sodium bicarbonate | 3 ounces.  |
| Tartaric acid      | 2½ ounces. |
| Starch             | 4 ounces.  |
| Oil of lemon       | ½ dram.    |
| Oil of orris       | 5 minims.  |
| Oil of ylang-ylang | 5 minims.  |

(Any perfume may be substituted for the above if preferred.) As many such powders may be ordered as desired, and one powder added to the bath when it is ready.

### TOILET AMMONIA

The *Druggists Circular* for March, 1908, suggests the following:

| R.   | gm. or c.c. |              |
|--|-------------|--------------|
| Aquæ ammoniæ                                   | 250         | Oss          |
| Saponis mollis                                 | 120         | flʒiv        |
| Acidi oleici                                   | 10          | flʒiiss      |
| Olei myrciæ,                                   |             | or           |
| Olei rosmarini, āā                             | 1           | m. xv        |
| Olei lavandulæ                                 | 10          | flʒiiss      |
| Aquæ, q. s. ad                                 | 1000        | q. s. ad Oii |
| M. et sig.: Ammonia water for toilet purposes. |             |              |

“Dissolve the soap in 500 c.c. (a pint) of warm water, and when cool add the ammonia water and the oils; mix by agitation and add lastly the oleic acid and enough water to make 1,000 c.c. (a quart).”

### SHAMPOO MIXTURES

As a physician is occasionally asked to prescribe something for use as a hair tonic or to cleanse the scalp, and is likely to refer the patient to a druggist or to advise some proprietary preparation because he knows of no suitable formula, the following may be of service:

#### LIQUID EGG SHAMPOO

|  |          |
|--|----------|
| Soft soap .....                        | 2 ounces |
| Whites of .....                        | 4 eggs   |
| Potassium carbonate .....              | 1 ounce  |
| Tar water .....                        | 1 pint   |
| Glycerin .....                         | 2 ounces |
| Orange flower water, enough to make... | 2 ounces |

Beat the whites of the eggs into a froth while gradually adding the tar water. Dissolve the soap in a mixture of glycerin and six ounces of orange flower water. Mix the two solutions and make up to two pints with orange flower water.

—*Druggists Circular*.

Also:

|                             |           |
|-----------------------------|-----------|
| Transparent soap .....      | 4 ounces  |
| Glycerin .....              | 2 ounces  |
| Whites of .....             | 3 eggs    |
| Tincture of green soap..... | 1 ounce   |
| Oil of rosemary.....        | 45 minims |
| Oil of rose geranium.....   | 30 minims |
| Water, enough to make.....  | 2 pints   |

Melt the soap in twelve ounces of water, add the glycerin and stir until cool; then add the green soap and the oils. Mix the whites of the eggs with eight ounces of water and stir into the soap mixture. Shake well, let stand for twenty-four hours, and strain through flannel.—*Druggists Circular*.

### YEAST

The value of brewers' yeast in infections is too little known, and, if its value is known, it is too infrequently resorted to. In bowel infections of all kinds, in liver insufficiency, in cholecystitis, in duodenitis, and especially when constipation is present, it is valuable.

The bowels move more readily with it and with less disturbance than from almost any other laxative or cathartic. A heavily coated tongue quickly becomes cleaner and often perfectly clean, tympanites is diminished, and the temperature is often lowered with this improvement of the gastrointestinal condition. In localized inflammatory processes, such as frequently occur in the pelvis, it is often a factor in preventing the formation of pus and consequent abscess. It increases leucocytosis, and perhaps raises the opsonic index in fighting an infection. As a cleanser of ulcers and local suppurations it is very valuable, and it is used with great success in vaginal inflammations, specific and otherwise, and in cervical endometritis.

For internal treatment, the upper layer of brewers' yeast should be obtained, and if placed in the ice box will keep for several days. The dose is from a teaspoonful to a tablespoonful, three or four times in twenty-four hours, administered in a glass of water. Few patients object to it, as it makes a not unpleasant sour drink. If a patient does not object to it, and if it does not cause gastric disturbance, which it rarely does, the frequency and size of the dose is regulated by the effect on the bowels, the more the action on the bowels, the smaller the dose.

As a vaginal injection it may be used diluted with three or four parts of warm water.

Simple fresh brewers' yeast is more valuable as a nuclein treatment than any other nuclein offered or prepared.

---

## PROPRIETARIES VERSUS U. S. P. AND N. F. PREPARATIONS

The following are criticisms of the exclusive use of the United States Pharmacopeia and National Formulary preparations:

1. If physicians were to confine themselves to these preparations, useful new drugs would never become known, and the medical world and its patients would thus be deprived of valuable remedies.

2. Many of the Pharmacopeia and National Formulary preparations are imperfect in their make-up, and are poor imitations of proprietary preparations.

3. Some products must be ordered by proprietary names, and hence consistency is broken in favor of certain firms.

There is no question that there are a few valuable drugs (not mixtures) that have no recognition in the Pharmacopeia and National Formulary. To avoid this omission, once in five, or perhaps better once in three years, there should be issued an addendum to the Pharmacopeia which should contain drugs found valuable by investigations made by the Committee on Revision of the Pharmacopeia. Drugs so recommended would be considered official and would be incorporated in the next Pharmacopeia. At present the Council on Pharmacy and Chemistry is investigating new drugs and putting its honest stamp of approval or disapproval on each. The value of such investigation and such recommendation is inestimable to the practicing physician.

There is no excuse for a large number of products produced by different firms which differ but slightly, if at all, in their chemical action or in molecular constituency. It would be obviously impossible to recognize all these drugs in the Pharmacopeia. Also if a physician tries several drugs or preparations which differ from each other *in name only*, and then, influenced by the ever-varying behavior of the same drugs with different individuals, reports that one preparation is far ahead, in its favorable action, of all the others, it can readily be seen that such medical reports are grossly deceptive, sometimes prejudiced, and often unwittingly absolutely untrue. This is the reason that one physician declares such and such a silver preparation, for instance, to be far better than all others, a second prefers another preparation of silver, and a third still another. Chemical analysis will show that these preparations are practically alike, and careful clinical investigations, *long enough continued*, will show that each of these preparations acts similarly to the others, provided that the dose of the active ingredient is the same. Likewise, the various iodine combinations which are said "to give no symptoms of iodism" are shown by chemical analyses to contain such small amounts of iodine that they could not give undesirable symptoms. In other words, if as small a dose of



potassium or sodium iodid should be given as is represented by the amount of iodid in the recommended dose of the proprietary product, the absence of unpleasant symptoms would be the same.

On the other hand, when a physician uses every proprietary preparation or drug that is presented to him he will very soon, *by the variations in clinical experience and results*, unjustly condemn a splendid preparation offered him by one firm and laud a similar but inferior preparation offered him by some other firm. This is manifestly unjust to the pharmaceutical firm that produces the best preparation. The physician in general practice has no way of determining which of these preparations is the best. Consequently there should be some referee to determine this for him, and the Committee on Revision of the Pharmacopeia should be the court of appeal. In the meanwhile the Council on Pharmacy and Chemistry of the American Medical Association is presenting honest reports of the products offered it for investigation.

It is true that many National Formulary preparations, as well as some of the Pharmacopeial preparations, are imperfect, as, for instance, some of the organic iron preparations. If a physician does not think that he can get the results desired from the simple iron preparations, and wishes to order an organic preparation, an honest druggist should furnish him with the best preparation that can be bought. If the best preparation is made by a certain firm, the druggist should buy that preparation of that firm. It should not be necessary for the physician to specify. To put the druggist on his honor, a physician writing for any preparation that is not readily made by the pharmacist himself should write after the preparation "the best," and the druggist so trusted should furnish the best preparation and charge the patient what he must for the best.

With the splendid laboratory equipments of the large pharmaceutical firms, and with the scientific ability of their chemists, it would seem to be the duty of these firms to prove to the committees revising the National Formulary and Pharmacopeia how much better their preparations of Pharmacopeial and National For-

mulary combinations are than those now official. The official preparations should then be made according to the formula proved chemically and pharmacally to be the best, and all would be the same, and each druggist could buy of the firm with whom he traded, and the physician ordering that preparation could always expect the same product.

While this suggestion is idealistic and seems to partake of celestial perfection, still it is not only possible, but probable, that sooner or later such conditions will obtain. It resolves itself into the following propositions:

1. Every patient desires the best treatment that he can obtain.

2. Every physician will order the best preparations of drugs of which he has knowledge.

3. Every druggist will fill the prescription with the best preparation called for that he can buy.

4. Every pharmaceutical firm will furnish as good a preparation of the best drugs as can be obtained in any market, and each preparation so furnished will come up to the standard required by the official books, viz.: the United States Pharmacopeia and National Formulary.

The practicing physician is now confronted by two evils. If he specifies a particular make of a preparation in its original package the patient often receives therewith a mass of literature concerning other products made by the same firm and gratuitous instruction not only "how to take" this preparation and of the many things for which it is of value, but also is advised to prevent other conditions or diseases by taking other remedies which this firm produces. Even if the druggist removes this mass of literature and superfluous labels from the package, often the firm's name or the name of the preparation is imprinted in the glass, and to the patient it appears that he has paid perhaps \$2.00 for an office visit to get a \$1.00 bottle of "patent medicine." If, on the other hand, the physician orders the preparation removed from its original package and transferred to the druggist's bottle, there is the possibility, and it probably occurs not infrequently, that the

patient will receive an inferior product substituted for the one ordered. This generally can not be discovered by the physician or the patient and, therefore, can not be prevented. Consequently a prescription calling for "the best" puts the druggist on his honor, and the patient is more likely to receive the best.

The above method of prescribing products difficult of manufacture applies to well-recognized preparations and not to mixtures such as cough, diuretic or hypnotic mixtures. Any ready-made preparation which contains a series of ingredients is simply like ready-made clothing and will fit the individual about as well. In other words, the patient is fitted to such a preparation and not the preparation fitted to the patient. If a physician can not write a prescription that is individualized to his patient, he should not practice medicine, but should instead take steps to prepare himself in this important branch of therapeutics.

If a physician desires to order a proprietary preparation of milk, laxative salt, disinfectant, antiseptic mixture, or cosmetic ointment or powder, he should not write a prescription for it. He should either tell the patient to obtain it, or write the name informally on any piece of paper, or on the back of his prescription blank. If this method is followed there is no prescription to be filled, the patient is not charged for the filling of a prescription, the patient knows that he is obtaining a proprietary article, and does not think that the physician has endeavored to humbug him by writing a formal prescription for something he could have readily obtained without a prescription.

Every physician should be pleased to meet a gentlemanly traveling salesman of a reputable pharmaceutical firm. He may investigate new drugs and elegant preparations, but he should never tolerate the presentation of a mixture which he should be better able to combine for himself to suit his individual patients. If a new drug is offered, synthetic or other, and the physician wishes to try it, he should *order it as the drug* and give it in capsule, powder or solution as he deems advisable. He should *never prescribe a preparation* of this new drug offered by the firm interested, as many times the activ-

ity has been accentuated by the addition of some very common and well-known active drug.

It should be repeatedly declared and understood by all that the best therapeutic work can be done only by the perfect cooperation of pharmaceutical firms, dispensing druggists and physicians.



# INDEX OF SUBJECTS

[Black-face numerals indicate pages on which the subject referred to forms the main topic; on pages indicated by light-face type, the subject is merely considered incidentally.]

|  | PAGE       |
|--|------------|
| Abbreviated and unabbreviated Latin terms.....                                     | <b>13</b>  |
| Acapnia .....  | 314        |
| Acetanilid in headache.....  | 230        |
| poisoning, antidotes for.....  | 46         |
| Acetphenetidin in cold.....  | 180        |
| in headache .....  | 230        |
| poisoning, antidotes for.....  | 46         |
| Acid, boric, carbolic, carbonic, etc.; see Boric acid, Phenol, Carbonic acid, etc. |            |
| Acidity of Stomach, excessive; see Hyperchlorhydria                                |            |
| of urine; see Urine, hyperacidity of   |            |
| Acids, mineral, poisoning from, antidotes for.....                                 | 46         |
| Acne .....   | 292        |
| Aconite in cold .....  | 180, 182   |
| in cystitis .....  | 250        |
| poisoning, antidotes for.....  | 46         |
| Adrenal substance and preparations; see Suprarenal substance                       |            |
| Age and dosage .....   | <b>16</b>  |
| Albuminized milk .....   | 345        |
| water .....  | 345        |
| Alcohol .....  | 427        |
| in nephritis .....   | 257        |
| in tropical dysentery .....  | 160        |
| poisoning (acute), antidotes for.....  | 46         |
| Alcoholic cerebral edema.....  | <b>87</b>  |
| Alcoholism, chronic .....  | <b>79</b>  |
| Alkali poisoning, antidotes for.....   | 46         |
| Alkalies .....   | <b>386</b> |
| in cystitis .....  | 230        |
| Almond oil in eczema .....   | 287        |
| Aloes .....  | <b>402</b> |
| Aloin .....  | 402, 404   |
| Ammonia, toilet .....  | <b>429</b> |
| Ammoniated mercury; see Mercury, ammoniated  |            |
| Ammonium bromid as hypnotic .....  | 364        |
| chlorid in cold .....  | 184        |
| chlorid in gall-stone colic.....   | 173        |
| ichthyosulphonate .....  | 360        |
| ichthyosulphonate in acne .....  | 296        |
| Amyl nitrite .....   | 382        |
| in angina pectoris.....  | 213        |
| Anemia .....   | <b>95</b>  |
| pernicious, arsenic in .....   | 355        |



|  | PAGE     |
|--|----------|
| Angina pectoris .....  | 213      |
| Anthelmintics .....  | 145      |
| Antidotes and poisons .....  | 46       |
| Antifebrin poisoning, antidotes for.....   | 46       |
| Antimony poisoning, antidotes for.....   | 46       |
| Antipyrin in chorea .....  | 222      |
| in hay fever .....   | 206      |
| poisoning, antidotes for.....  | 46       |
| Antiseptic gargles, inhalations, mouth-washes; see Gargles, anti-septic; Inhalations, antiseptic; Mouth-washes, antiseptic |          |
| powder, soluble .....  | 419, 428 |
| powder, soluble, in eczema.....  | 291      |
| Antiseptics .....  | 419      |
| intestinal, in typhoid.....  | 68       |
| Apothecaries' and metric weights and fluid measures, relative values of .....  | 38       |
| weights and fluid measure.....   | 37       |
| Aqua hydrogenii dioxidi; see Hydrogen peroxid  |          |
| Argenti nitras; see Silver nitrate   |          |
| Argyrol in cystitis.....   | 250      |
| Arrowroot gruel .....  | 341      |
| Arsenic .....  | 354      |
| idiosyncrasy toward .....  | 18       |
| in acne .....  | 296      |
| in anemia .....  | 97, 98   |
| in asthma .....  | 198, 203 |
| in chorea .....  | 221      |
| in cold .....  | 185      |
| in psoriasis .....   | 302      |
| in warts .....   | 298      |
| poisoning, antidotes for.....  | 46       |
| Arterial tension in nephritis .....  | 254      |
| Arthralgia .....   | 130      |
| Arthritis; see also Rheumatism   |          |
| acute, salicylic acid in .....   | 419      |
| Asiatic pill in psoriasis .....  | 301      |
| Aspidium oleoresin for tapeworm.....   | 146      |
| Asthma .....   | 192      |
| Atomization .....  | 35       |
| Atropin in asthma .....  | 193      |
| in cold .....  | 182      |
| in enterocolitis .....   | 153      |
| in hay fever .....   | 206      |
| in iritis .....  | 270      |
| in myalgia and joint pains.....  | 130      |
| in sciatica .....  | 235      |
| poisoning, antidotes for .....   | 46       |
| Bacillary dysentery .....  | 156      |
| Baldness, incipient .....  | 311      |
| Balsam of Peru in itch.....  | 279      |
| Balsams in specific urethritis.....  | 230      |
| Barley gruel .....   | 340      |
| water .....  | 342      |
| Bath powder .....  | 348, 429 |

|   | PAGE     |
|---|----------|
| Baths, alkaline, in skin diseases.....                      | 390      |
| carbonic acid .....   | 350      |
| hot, in scarlet fever.....                                  | 98       |
| in eczema .....   | 287      |
| in nephritis .....  | 257      |
| Beef egg-nog .....  | 341      |
| Belladonna; see also Atropin                                |          |
| in asthma .....   | 181      |
| in chordee .....  | 248      |
| in cystitis .....   | 249      |
| poisoning, antidotes for .....                              | 46       |
| Beta-naphthol in eczema .....                               | 290      |
| in itch .....   | 280      |
| Bicarbonate of sodium; see Sodium bicarbonate               |          |
| Bichlorid of mercury; see Mercuric chlorid                  |          |
| Biliary colic .....   | 168      |
| Birch, oil of, for gout and rheumatism.....                 | 130      |
| Bismuth in eczema .....                                     | 289      |
| in enterocolitis of children.....                           | 152, 154 |
| in gall-stone colic .....                                   | 171      |
| in gastric ulcer .....                                      | 143      |
| in gastritis .....  | 387      |
| in rheumatism .....   | 118      |
| Bladder, inflammation of, suppurative.....                  | 248      |
| Blakko's ointment in warts.....                             | 298      |
| Blepharitis .....   | 266      |
| Blood, carbon dioxid content of, in shock.....              | 314      |
| Blood-letting in diabetes .....                             | 78       |
| Blood-pressure, drugs to lower.....                         | 380, 396 |
| Boils .....   | 304      |
| Bone tuberculosis .....                                     | 322      |
| Boric acid in blepharitis .....                             | 267      |
| acid in eczema .....  | 291      |
| acid in leg ulcers.....                                     | 321      |
| acid in ophthalmia neonatorum.....                          | 262      |
| acid in otitis media.....                                   | 275      |
| Bothriocephalus; see Tapeworm                               |          |
| Bowel antiseptics in typhoid.....                           | 68       |
| antiseptics, salicylates as .....                           | 419      |
| Brain, alcoholic edema of .....                             | 87       |
| Breath, foul .....  | 132      |
| Bright's disease .....                                      | 254      |
| Brimstone .....   | 358      |
| Bromids (see also Calcium bromid, Sodium bromid, etc.)..... | 361      |
| Bromin in epilepsy .....                                    | 224      |
| Bronchitis, acute, alkalies in.....                         | 390      |
| chronic .....   | 185      |
| Bubo, chancroidal .....                                     | 317      |
| Cade, oil of, in eczema.....                                | 290      |
| Caffein in asthma .....                                     | 201      |
| in headache .....   | 229, 230 |
| in tropical dysentery .....                                 | 160      |
| Calamine in eczema .....                                    | 282      |
| Calcined magnesia .....                                     | 391      |

|   | PAGE       |
|---|------------|
| Calcium bromid .....                                    | 364        |
| chlorid in hemoptysis.....                              | 192        |
| lactate .....   | 353        |
| lactate in eczema .....                                 | 286        |
| salts, uses of .....                                    | 352        |
| Calculus, biliary .....                                 | 168        |
| Calomel; see Mercurous chlorid, mild                    |            |
| Camphor for chilblains.....                             | 312        |
| Camphor oil in enterocolitis .....                      | 155        |
| Camphorated chloral .....                               | 369        |
| Cannabis indica in warts .....                          | 299        |
| Carbolic acid; see Phenol                               |            |
| Carbonate of magnesium; see Magnesium carbonate         |            |
| Carbonic acid, medical uses of.....                     | 350        |
| Carcinoma, mercury injections in.....                   | 71         |
| Cardiospasm .....                                       | 139        |
| Cardiovascular-renal disease .....                      | 251        |
| Cascara sagrada .....                                   | 167, 398   |
| Cathartics .....  | 354        |
| Centigrade, Fahrenheit equivalent to.....               | 38         |
| Cerebral edema, alcoholic.....                          | 87         |
| Cerium oxalate in gastric ulcer.....                    | 143        |
| Chancroidal bubo .....                                  | 317        |
| Chilblains .....  | 311        |
| Chilblains, calcium salts in.....                       | 352        |
| Childhood, water in .....                               | 349        |
| Children, dosage for.....                               | 16, 43, 44 |
| eczema of .....   | 285        |
| young, enterocolitis of .....                           | 149        |
| Chloral .....   | 365        |
| and potassium bromid compound .....                     | 365, 369   |
| in chorea .....   | 222        |
| camphorated .....                                       | 369        |
| hydrated .....  | 368        |
| hydrated, in epilepsy .....                             | 224        |
| hydrated, in warts .....                                | 298        |
| idiosyncrasy toward .....                               | 18         |
| poisoning, antidotes for .....                          | 46, 367    |
| Chloralamid .....                                       | 370        |
| Chlorin poisoning, antidotes for.....                   | 46         |
| Chloroform poisoning, antidotes for.....                | 46         |
| Chlorosis .....   | 97         |
| arsenic in .....  | 355        |
| Cholecystitis .....                                     | 168        |
| Chordee .....   | 248        |
| Chorea .....  | 119        |
| acute .....   | 220        |
| Chrysarobin in psoriasis .....                          | 301        |
| Cinchona; see Quinin                                    |            |
| Circulatory depressants .....                           | 380        |
| organs, diseases of .....                               | 208        |
| Citrate of potassium, etc.; see Potassium citrate, etc. |            |
| Cocain, idiosyncrasy toward .....                       | 18         |
| in iritis .....   | 271        |
| in sciatica .....                                       | 234        |
| poisoning, antidotes for .....                          | 47         |

|   | PAGE          |
|---|---------------|
| Codein in diabetes .....                              | 78            |
| in rheumatism .....                                   | 125           |
| Colchicum in gout, .....                              | 129           |
| in muscle and joint pains, .....                      | 130           |
| poisoning, antidotes for .....                        | 47            |
| Cold in nephritis .....                               | 257           |
| Colds .....   | 175           |
| Colic, biliary .....                                  | 168           |
| Colocynth .....                                       | 417           |
| Comedones .....                                       | 292           |
| Compound extract, Compound powder; see names of drugs |               |
| Conium poisoning, antidotes for.....                  | 47            |
| Conjunctivitis, infantile .....                       | 262           |
| Constipation (see also Cathartics).....               | 163           |
| as a cause of acne.....                               | 292           |
| in infants .....                                      | 167           |
| magnesia in .....                                     | 393           |
| Copaiba in specific urethritis .....                  | 239           |
| Copper poisoning, antidotes for.....                  | 47            |
| Corn-meal gruel .....                                 | 341           |
| Corpulency; see Obesity                               |               |
| Corrosive sublimate; see Mercuric chlorid             |               |
| Counterirritants: croton oil .....                    | 414           |
| iodin .....   | 426           |
| Creams, massage or face.....                          | 348           |
| Creosote poisoning, antidotes for.....                | 47            |
| Cresol in itch .....                                  | 280           |
| Croton oil .....                                      | 413           |
| Cubeb in specific urethritis .....                    | 239           |
| Cystitis, suppurative .....                           | 248           |
| Dandruff and incipient baldness .....                 | 311, 424      |
| Depilatory .....                                      | 310           |
| Diabetes mellitus .....                               | 72            |
| Diachylon ointment in leg ulcers.....                 | 320           |
| Diaphoresis; see also Sweating                        |               |
| in serious eye affections.....                        | 264           |
| Diathesis .....                                       | 58            |
| Diet (see also Infant-feeding).....                   | 340           |
| in acne .....   | 293           |
| in chorea .....                                       | 119           |
| in constipation .....                                 | 164           |
| in diabetes mellitus .....                            | 73            |
| in eczema of infants .....                            | 288           |
| in enterocolitis of children .....                    | 149           |
| in epilepsy .....                                     | 223           |
| in gall-stone colic .....                             | 171           |
| in gastric ulcer .....                                | 142, 144      |
| in glycosuria .....                                   | 73            |
| in myocarditis .....                                  | 269           |
| in nephritis .....                                    | 258, 260      |
| in obesity .....                                      | 117           |
| in rheumatism .....                                   | 118, 119, 120 |
| in typhoid .....                                      | 64            |
| Digestive organs, diseases of .....                   | 132           |

|  | PAGE       |
|--|------------|
| Digitalis in myocarditis .....             | 211, 212   |
| poisoning, antidotes for .....             | 47         |
| Dipsomania .....                           | 79         |
| Disease, Bright's; see Bright's Disease    |            |
| Diseases, general .....                    | 57         |
| of circulatory organs .....                | 208        |
| of digestive organs .....                  | 132        |
| of the ear .....                           | 273        |
| of the eye .....                           | 262        |
| of the genito-urinary tract.....           | 237        |
| of the kidneys .....                       | 254        |
| of the nervous system.....                 | 219        |
| of the respiratory organs.....             | 175        |
| of the skin .....                          | 277        |
| Disinfectant spray for sick-room .....     | 429        |
| yeast as .....                             | 430        |
| Disinfectants; see also Antiseptics        |            |
| Diuretic, water as .....                   | 348        |
| Diverticulitis .....                       | 167        |
| Dobell's solution for bad breath.....      | 134        |
| Dosage for children.....                   | 16, 43, 44 |
| Dover's powder in cold.....                | 179        |
| powder in enterocolitis .....              | 155        |
| Drastics; see Cathartics                   |            |
| Dressing, alcohol as .....                 | 427        |
| Dreuw's ointment in psoriasis .....        | 301        |
| Drinks, albuminous .....                   | 343        |
| starchy, and gruels.....                   | 340        |
| Dropsy, elaterium in .....                 | 416        |
| jalap in .....                             | 410        |
| Drugs; see also Remedies                   |            |
| Drugs, frequency of administration of..... | 21         |
| fugitive and cumulative action of.....     | 21         |
| idiosyncrasies toward .....                | 17         |
| incompatibilities of .....                 | 23         |
| methods of administration of .....         | 31         |
| relations of .....                         | 19         |
| synonyms of names of .....                 | 48         |
| Drunkenness; see Alcoholism                |            |
| Duboisin in iritis.....                    | 279        |
| Dyspepsia, sodium bicarbonate in.....      | 390        |
| Dysentery, tropical .....                  | 156        |
| Ear, diseases of .....                     | 273        |
| middle, inflammations of.....              | 273        |
| Eclampsia .....                            | 329        |
| veratrum viride in.....                    | 382        |
| Eczema .....                               | 281        |
| fissures, salicylic acid in.....           | 423        |
| follicular, resorcinol in.....             | 424        |
| Edema, alcoholic cerebral .....            | 87         |
| purgatives in .....                        | 397        |
| Egg and brandy .....                       | 344        |
| and sherry gruel .....                     | 341        |
| broth .....                                | 344        |
| Eggnog .....                               | 344        |



|   | PAGE     |
|---|----------|
| Elaterin .....  | 415      |
| Elisir; see names of drugs                                      |          |
| Enemas in enterocolitis .....                                   | 153      |
| in typhoid .....  | 65       |
| Enterocolitis of young children .....                           | 149      |
| Epilepsy .....  | 223      |
| Epsom salt; see Magnesium sulphate                              |          |
| Erysipelas, iodine in .....                                     | 426      |
| Eserin (physostygmmin) in iritis.....                           | 270      |
| Ether poisoning, antidotes for .....                            | 47       |
| Eucairn poisoning, antidotes for.....                           | 47       |
| Eucynimus .....   | 397      |
| Exalgin poisoning, antidotes for.....                           | 46       |
| Exercise in nephritis .....                                     | 257      |
| Extractum; see names of drugs                                   |          |
| Eye, diseases of.....   | 262      |
| serious affections of, sweating in.....                         | 264      |
| Eyelids, inflammation of .....                                  | 266      |
| Face creams .....   | 348      |
| Fahrenheit, Centigrade equivalent of.....                       | 38       |
| Family history .....  | 57       |
| Farina gruel .....  | 342      |
| Fatness; see Obesity  |          |
| Felons .....  | 318      |
| Ferric and Ferrous compounds; see Iron                          |          |
| Fever (see also Hay fever, Rheumatic fever, etc.), salt in..... | 70       |
| Flatfoot, differentiated from rheumatism.....                   | 127      |
| Flour gruel .....   | 340, 342 |
| Flowers of sulphur .....  | 358      |
| Fluidextractum; see names of drugs                              |          |
| Food; see Diet  |          |
| Formaldehyd in ringworm .....                                   | 308      |
| Fowler's solution; see Arsenic                                  |          |
| Fuller's lotion in rheumatism.....                              | 122      |
| Furuncles .....   | 303      |
| Gall-stone colic .....  | 168      |
| Gamboge .....   | 412      |
| Gargles, antiseptic .....                                       | 135, 138 |
| Gas poisoning, illuminating.....                                | 114      |
| Gastric flatulence, magnesia in.....                            | 393      |
| hemorrhage .....  | 141      |
| hyperacidity; see Hyperchlorhydria                              |          |
| ulcer .....   | 141      |
| Gastritis, bismuth and soda in.....                             | 387      |
| with constipation, magnesia in.....                             | 392      |
| Gaultheria; see Wintergreen                                     |          |
| Gelsemium poisoning, antidotes for.....                         | 47       |
| Genito-urinary tract, diseases of .....                         | 237      |
| Gentian in acne .....   | 295      |
| Glauber's salt; see Sodium sulphate                             |          |
| Glonoine (glyceryl nitrate, trinitrate); see nitroglycerin      |          |
| Glycerin to soften hands.....                                   | 312      |
| Glycosuria .....  | 72       |
| Glycyrrhiza; see Licorice                                       |          |
| Gonorrhoea (see also Urethritis).....                           | 237      |
| phenyl salicylate in .....                                      | 422      |

|   | PAGE |
|---|------|
| Gout (see also Joint pains).....                        | 128  |
| Grafts, skin, in leg ulcers .....                       | 321  |
| Granatum for tapeworm.....                              | 147  |
| Gregory's powder .....                                  | 409  |
| Grindelia robusta in asthma.....                        | 200  |
| Gruels and starchy drinks .....                         | 340  |
| Guaiacol .....  | 424  |
| in gout .....   | 131  |
| Hair, falling of, in women.....                         | 309  |
| superfluous, removal of.....                            | 310  |
| tonic, cleansing .....                                  | 428  |
| Hands, lotion for .....                                 | 312  |
| Hay fever .....   | 204  |
| Headache .....  | 225  |
| calcium salts in .....                                  | 352  |
| Heart, inflammation of muscular walls of.....           | 268  |
| Hemoptysis .....  | 190  |
| Hemorrhage, gastric .....                               | 141  |
| postpartum .....  | 333  |
| pulmonary .....   | 190  |
| Hexamethylenamin in specific urethritis.....            | 241  |
| Homatropin in iritis .....                              | 270  |
| Hot air in rheumatism .....                             | 122  |
| Hydrargyri —; see Calomel, Corrosive sublimate, Mercury |      |
| Hydrargyrum; see Mercury                                |      |
| Hydrobromic acid .....                                  | 364  |
| Hydrochloric acid in enterocolitis .....                | 153  |
| Hydrocyanic acid poisoning, antidotes for.....          | 47   |
| Hydrogen peroxid as mouth wash in syphilis.....         | 102  |
| Hymenolepis; see Tapeworm                               |      |
| Hyoscin .....   | 376  |
| Hyoscyamus in cystitis .....                            | 249  |
| Hyperchlorhydria, alkalies in .....                     | 387  |
| magnesia in .....                                       | 393  |
| Hypnotics .....   | 361  |
| Hypodermatic medication .....                           | 31   |
| Hypodermatic treatment of syphilis.....                 | 103  |
| Hypothyroidism in pregnancy.....                        | 324  |
| Ichthyol .....  | 359  |
| in acne .....   | 296  |
| in leg ulcers .....                                     | 320  |
| Idiosyncrasies toward drugs .....                       | 17   |
| Illuminating gas poisoning .....                        | 114  |
| Impetigo contagiosa .....                               | 300  |
| Incompatibilities of drugs .....                        | 23   |
| Indian meal gruel .....                                 | 341  |
| Indicanuria .....                                       | 161  |
| Individual tendencies .....                             | 57   |
| Infant-feeding .....                                    | 335  |
| sodium citrate in .....                                 | 389  |
| Infantile paralysis .....                               | 219  |
| Inhalations .....                                       | 35   |
| antiseptic, for bad breath .....                        | 134  |
| in asthma .....   | 201  |
| Injection treatment of syphilis .....                   | 103  |
| Injections in urethritis .....                          | 241  |
| Insomnia; see Hypnotics                                 |      |

|  | PAGE       |
|--|------------|
| Intestinal antiseptics in typhoid .....                        | 68         |
| antiseptics, salicylates as .....                              | 388        |
| putrefaction .....   | 227        |
| Inunction treatment of syphilis.....                           | 104        |
| Iodids in asthma .....   | 197        |
| in hay fever .....   | 206        |
| in myocarditis .....   | 212        |
| in pericarditis .....  | 218        |
| in syphilis .....  | 102        |
| Iodin .....  | <b>425</b> |
| in bone tuberculosis .....                                     | 322        |
| in chilblains .....  | 311        |
| in ringworm .....  | 306        |
| poisoning, antidotes for .....                                 | 47         |
| Iodism .....   | 106        |
| Iodoform .....   | 426        |
| poisoning, antidotes for .....                                 | 47         |
| Ipecac in tropical dysentery .....                             | 158        |
| Iritis .....   | <b>268</b> |
| Iron, in acne .....  | 296        |
| in anemia .....  | 97         |
| in rheumatism .....  | 126        |
| Irrigation in cystitis .....                                   | 251        |
| Itch .....   | <b>277</b> |
| Itching, camphorated chloral in .....                          | 369        |
| Jaborandi in serious eye affections.....                       | 264        |
| Jalap .....  | <b>409</b> |
| Joint pains and myalgia .....                                  | <b>130</b> |
| Junket eggnog .....  | 344        |
| Kidneys, diseases of.....                                      | <b>254</b> |
| Lactate of calcium, etc.; see Calcium lactate, etc.            |            |
| Lady Webster pill .....  | 404        |
| Laryngitis, tuberculous, mercury in .....                      | 71         |
| Lasser's paste in eczema.....                                  | 283        |
| Latin in prescriptions.....                                    | 9          |
| terms and abbreviations.....                                   | <b>13</b>  |
| Laudanum in tropical dysentery.....                            | 157        |
| Laxatives (see also cathartics, constipation) in epilepsy..... | 224        |
| Lead poisoning, antidotes for.....                             | 47         |
| Leg, ulcers of.....  | <b>319</b> |
| Lenhartz treatment of gastric ulcer.....                       | 144        |
| Licorice powder, compound.....                                 | 358        |
| Liniment; see names of drugs                                   |            |
| Liniments, use of.....   | <b>33</b>  |
| Liquor; see also names of drugs                                |            |
| Liquor antisepticus of Pharmacopeia.....                       | <b>135</b> |
| antisepticus alkalinus of National Formulary.....              | 135        |
| Lithium bromid .....   | 364        |
| Lobelia in asthma.....   | 200        |
| Lotion for hands.....  | 312        |
| Fuller's, in rheumatism.....                                   | 122        |
| Lumbago .....  | 130        |
| Lungs, hemorrhage of .....                                     | <b>190</b> |
| Lycopodium in eczema.....                                      | 291        |
| Magma magnesiae .....  | 392        |
| in gastric ulcer.....  | 143        |
| Magnesia; see Magnesium oxid                                   |            |

|  | PAGE               |
|--|--------------------|
| Magnesium bromid .....   | 365                |
| carbonate .....  | 392                |
| oxid .....   | <b>391</b>         |
| oxid in cystitis.....  | 249                |
| sulphate in enterocolitis.....   | 151                |
| sulphate in iritis.....  | 269                |
| sulphate in tapeworm.....  | 146                |
| sulphate in tropical dysentery.....                                      | 158                |
| sulphate in warts.....   | 298                |
| Male fern in tapeworm.....   | 146                |
| Malignant growths .....  | 70                 |
| Manganese in anemia.....   | 97, 98             |
| Mantellin's paint for warts.....   | 298                |
| Massage, abdominal, in constipation.....                                 | 165                |
| cream .....  | <b>348</b>         |
| Mayapple .....   | <b>399</b>         |
| Measures and weights .....   | <b>37</b>          |
| Medicines; see Drugs; Remedies   |                    |
| Meningitis, acute serous (or alcoholic); see Wet-brain                   |                    |
| Menthol in chilblains.....   | 312                |
| in cold .....  | 183                |
| in local sweating in tuberculosis.....                                   | 312                |
| in rheumatism .....  | 131                |
| Mercuric chlorid in ringworm.....  | 306                |
| chlorid in syphilis.....   | 103                |
| chlorid in warts.....  | 298                |
| chlorid poisoning, antidotes for.....                                    | 47                 |
| iodid, yellow, in myocarditis.....                                       | 212                |
| oxid, yellow, in blepharitis.....  | 267                |
| Mercurous chlorid, mild, in cold.....                                    | 181                |
| chlorid, mild, in enterocolitis.....                                     | 152                |
| chlorid, mild, in rheumatism.....  | 118                |
| Mercury, ammoniated, in eczema.....                                      | 290                |
| ammoniated, in impetigo contagiosa.....                                  | 300                |
| ammoniated, in psoriasis.....  | 301                |
| in carcinoma .....   | <b>71</b>          |
| in myocarditis .....   | 212                |
| in syphilis .....  | 70, 102            |
| poisoning, magnesia in .....   | 391                |
| Methyl salicylate .....  | 422, 423           |
| salicylate in rheumatism and gout.....                                   | 122, 130           |
| Metric system .....  | <b>39</b>          |
| and apothecaries' weights and fluid measures, relative<br>value of ..... | <b>38</b>          |
| Milk, albuminized .....  | 345                |
| diet in obesity, etc.....  | 117                |
| diet in rheumatism.....  | 118                |
| of magnesia; see Magma magnesic  |                    |
| of sulphur; see Sulphur, precipitated                                    |                    |
| Mistura; see names of drugs  |                    |
| Morphin in cold.....   | 180                |
| in cystitis .....  | 249                |
| in myalgia and joint pains.....  | 130                |
| in rheumatism .....  | 125                |
| in tropical dysentery.....   | 137                |
| Mouth-washes .....   | 101, 135, 136, 138 |
| Myalgia and joint pains .....  | <b>130</b>         |
| chloral hydrate in.....  | 369                |
| lumbar .....   | 231                |

|   | PAGE |
|---|------|
| Myocarditis .....   | 208  |
| Naphthalene crystals in leg ulcers. ....  | 320  |
| Narcotics; see also Hypnotics   |      |
| in asthma .....   | 200  |
| Neoplasms, malignant .....  | 70   |
| Nephritis, chronic .....  | 254  |
| Nervous system, diseases of .....   | 219  |
| Neuralgias, chloral hydrate in.....   | 369  |
| New and nonofficial remedies, list of.....  | 49   |
| Nicotin, poisonous effects of.....  | 89   |
| Niter, sweet spirits of.....  | 385  |
| Nitrate of potassium, of silver, etc.; see Potassium nitrate,<br>Silver nitrate, etc.   |      |
| Nitrites .....  | 382  |
| Nitroglycerin in angina pectoris.....   | 213  |
| in hemoptysis .....   | 119  |
| in myocarditis .....  | 213  |
| spirit of .....   | 382  |
| Nux vomica in acne.....   | 295  |
| vomica in enterocolitis.....  | 153  |
| vomica in leg ulcers.....   | 319  |
| vomica poisoning, antidotes for.....  | 47   |
| Oatmeal gruel .....   | 342  |
| water .....   | 343  |
| Obesity .....   | 117  |
| Obstetrics .....  | 323  |
| Oil; see also names of sources as Birch, Wintergreen, etc.<br>rub .....                 | 316  |
| Ointment; see names of drugs  |      |
| Ointments .....   | 34   |
| Oleoresinæ aspidii; see Male fern   |      |
| Olive oil in eczema.....  | 287  |
| Oleum gaultheriæ, tiglli, etc.; see Wintergreen oil, Croton<br>oil, etc.                |      |
| Ophthalmia neonatorum .....   | 262  |
| Opium (see also morphin), idiosyncrasy toward.....                                      | 18   |
| in chilblains .....   | 311  |
| in diabetes .....   | 78   |
| in enterocolitis of children.....   | 155  |
| in tropical dysentery.....  | 157  |
| poisoning, antidotes for.....   | 47   |
| Optimism and pessimism .....  | 59   |
| Organs, circulatory, digestive, etc.; see Circulatory organs,<br>Digestive organs, etc. |      |
| Osmic acid in sciatica.....   | 235  |
| Otitis media .....  | 273  |
| Ovarian extract in acne.....  | 295  |
| Oxid of magnesium of zinc, etc.; see Magnesium oxid, zinc<br>oxid, etc.                 |      |
| Oxygen inhalations in asthma.....   | 203  |
| Pain as symptom.....  | 63   |
| Paint, Mantellin's, for warts.....  | 298  |
| Pancreas preparations in diabetes.....  | 77   |
| Papilloma .....   | 297  |
| Paraldehyd .....  | 370  |
| poisoning .....   | 372  |
| Paralysis agitans, scopolamin in.....   | 379  |
| infantile .....   | 219  |
| Paronychia .....  | 318  |



|   | PAGE       |
|---|------------|
| Paste, Lassar's, in eczema.....                       | 283        |
| Unna's exfoliative resorcin.....                      | 425        |
| Pericarditis .....                                    | <b>214</b> |
| Perineal region, pruritus of.....                     | <b>305</b> |
| Permanganate of potassium; see Potassium permanganate |            |
| Pernicious anemia; see Anemia, pernicious             |            |
| Peroxid of hydrogen as mouth wash in syphilis.....    | 102        |
| Perspiration; see Sweating                            |            |
| Phenacetin in cold.....                               | 180        |
| in headache .....                                     | 230        |
| poisoning, antidotes for.....                         | 46         |
| Phenol in boils.....                                  | 304        |
| in eczema .....                                       | 284, 289   |
| in ringworm .....                                     | 308        |
| in toothache .....                                    | 137        |
| poisoning, antidotes for.....                         | 47         |
| Phenolphthalein .....                                 | 167        |
| Phenyl dimethyl-pyrazolon; see Antipyrin              |            |
| salicylate .....                                      | 419, 422   |
| salicylate in indicanuria.....                        | 163        |
| salicylate in urethritis.....                         | 239, 240   |
| Phosphorus poisoning, antidotes for.....              | 47         |
| Phthisis, ichthyol in.....                            | 360        |
| Physical remedies .....                               | <b>346</b> |
| Physostigma poisoning, antidotes for.....             | 47         |
| Physostigmin in iritis.....                           | 270        |
| Pill; see names of drugs                              |            |
| Pilocarpin in falling of hair.....                    | 310        |
| in serious eye affections.....                        | 264        |
| Pilula; see names of drugs                            |            |
| Pleurisy .....  | <b>188</b> |
| Podophyllin .....                                     | 401        |
| Podophyllum .....                                     | <b>399</b> |
| Poisons and antidotes .....                           | <b>46</b>  |
| Poisoning, illuminating gas.....                      | <b>114</b> |
| mercury .....   | 391        |
| paralydehyd .....                                     | 372        |
| snake-bite .....                                      | <b>108</b> |
| sulphonal .....                                       | 373        |
| tobacco .....   | 91         |
| Poliomyelitis, acute anterior.....                    | <b>219</b> |
| Pomegranate for tapeworm.....                         | 147        |
| Postpartum hemorrhage .....                           | 333        |
| Potash, caustic, in pruritus of perineal region.....  | 306        |
| Potassium and sodium tartrate in hay fever.....       | 207        |
| arsenite in psoriasis.....                            | 302        |
| arsenite in warts.....                                | 298        |
| bichromate in warts.....                              | 298        |
| bromid .....  | 364        |
| bromid, effervescent .....                            | 365        |
| bromid, effervescent, in headache.....                | 230        |
| chlorate solution as mouth wash in syphilis.....      | 102        |
| citrate in cystitis.....                              | 249        |
| citrate in hyperacidity of urine.....                 | 389        |
| citrate in rheumatism.....                            | 125        |
| hydroxid in pruritus of perineal region.....          | 306        |
| in specific urethritis.....                           | 245        |
| iodid, idiosyncrasy toward.....                       | 18         |
| iodid in bone tuberculosis.....                       | 322        |

|   | PAGE     |
|---|----------|
| Iodid in myocarditis .....                                | 212      |
| nitrate in asthma.....                                    | 204      |
| permanganate in specific urethritis.....                  | 246      |
| salts in specific urethritis.....                         | 238, 240 |
| Powder; see also names of drugs                           |          |
| antiseptic .....  | 428      |
| bath .....  | 429      |
| Pregnancy, toxemias of .....                              | 323      |
| vomiting of .....   | 326      |
| Prescribing, unscientific .....                           | 60       |
| Prescription writing .....                                | 9        |
| Proprietaries versus U. S. P. and N. F. preparations..... | 431      |
| Protargol in gonorrhea.....                               | 245, 246 |
| Pruritus of perineal region .....                         | 305      |
| salicylic acid in.....                                    | 423      |
| Psoriasis .....   | 300      |
| Pulmonary hemorrhage .....                                | 190      |
| Pulvis; see also names of drugs                           |          |
| antisepticus, N. F.....                                   | 428      |
| ipecacuanhæ et sodii; see Dover's powder                  |          |
| Purgatives; see Cathartics                                |          |
| Quinin, idiosyncracies toward.....                        | 17       |
| in cold .....   | 179      |
| in enterocolitis .....                                    | 153      |
| Radiotherapy; see Roentgen ray                            |          |
| Remedies (see also Drugs), relations of .....             | 19       |
| new and nonofficial, list of.....                         | 49       |
| physical .....  | 346      |
| systemic .....  | 352      |
| Renal diseases .....                                      | 254      |
| Resina; see names of drugs                                |          |
| Resorcin .....  | 424      |
| in dandruff and baldness.....                             | 311      |
| in eczema .....   | 284      |
| Respiratory organs, diseases of.....                      | 175      |
| Rhamnus purshiana .....                                   | 167, 398 |
| Rheum; see Rhubarb  |          |
| Rheumatic fever, sodium salicylate in.....                | 421      |
| Rheumatism (see also Myalgia).....                        | 117      |
| acute articular, salicylates in.....                      | 123      |
| methyl salicylate in.....                                 | 423      |
| oil of wintergreen in.....                                | 423      |
| salicylic acid in .....                                   | 419      |
| Rhinitis tablets in cold.....                             | 181      |
| Rhubarb .....   | 406      |
| and soda in rheumatism.....                               | 118      |
| Rice gruel .....  | 342      |
| water .....   | 343      |
| Ringer's solution for illuminating gas poisoning.....     | 116      |
| Ringworm .....  | 306      |
| Rochelle salt in hay fever.....                           | 207      |
| Roentgen ray in acne.....                                 | 296      |
| ray in pruritus of perineal region.....                   | 305      |
| ray in ringworm.....                                      | 306      |
| Rub, oil .....  | 346      |
| Scotch .....  | 347      |
| Salicylates in acute articular rheumatism.....            | 123      |
| Salicylate of sodium, etc.; see Sodium salicylate, etc.   |          |

|  | PAGE          |
|--|---------------|
| Salicylic acid (see also Wintergreen, oil of)..... | 419           |
| acid in blepharitis.....                           | 268           |
| acid in boils.....                                 | 304           |
| acid in eczema.....                                | 282, 283, 291 |
| acid in itch.....                                  | 281           |
| acid in psoriasis.....                             | 301           |
| acid in rheumatism.....                            | 118, 122, 124 |
| acid in warts.....                                 | 298, 299, 300 |
| Salicyllism .....                                  | 420           |
| Salol; see Phenyl salicylate                       |               |
| Salt in fever .....                                | 70            |
| Santal in specific urethritis.....                 | 239, 241      |
| Scabies .....                                      | 277           |
| Scalp, seborrhea of, resorcin in.....              | 424           |
| Scammony .....                                     | 404           |
| Scarlet fever, warm water in .....                 | 98            |
| Sciatica .....                                     | 231           |
| Scopolamin .....                                   | 376           |
| in iritis .....                                    | 270           |
| Scotch rub .....                                   | 347           |
| Seborrhea of scalp, resorcin in.....               | 424           |
| Shampoo mixtures .....                             | 430           |
| Shock .....  | 313           |
| Silver compounds, organic, in urethritis.....      | 241           |
| nitrate in cystitis.....                           | 250           |
| nitrate in ophthalmia neonatorum.....              | 262           |
| nitrate in tropical dysentery.....                 | 160           |
| nitrate in urethritis.....                         | 246           |
| poisoning, antidotes for.....                      | 47            |
| Skin, diseases of .....                            | 277           |
| grafts in leg ulcers.....                          | 321           |
| lesions of, sodium bicarbonate in.....             | 390           |
| profuse, oily secretion of, salicylic acid in..... | 424           |
| Sleeplessness; see Hypnotics                       |               |
| Snake poisoning .....                              | 108           |
| Sodium bicarbonate in cystitis.....                | 249           |
| bicarbonate in diabetes.....                       | 78            |
| bicarbonate in gastric ulcer.....                  | 143           |
| bicarbonate in rheumatism.....                     | 122           |
| bromid in chorea.....                              | 120           |
| bromid in insommia.....                            | 364           |
| citrate in infant-feeding.....                     | 389           |
| in pericarditis .....                              | 218           |
| in myocarditis .....                               | 212           |
| nitrite .....                                      | 383           |
| phosphate, effervescent, in gall-stone colic.....  | 171           |
| salicylate .....                                   | 421           |
| salicylate in iritis.....                          | 271           |
| salicylate in rheumatism.....                      | 123, 124      |
| sulphate in enterocolitis of children.....         | 151           |
| sulphate in tropical dysentery.....                | 158           |
| Solution; see names of drugs                       |               |
| Spirit, Spiritus; see names of drugs               |               |
| Spray to disinfect sick-room.....                  | 429           |
| St. Vitus' dance; see Chorea                       |               |
| Stomach (see also Gastric), hemorrhage of.....     | 141           |
| hyperacidity of; see Hyperchlorhydria              |               |
| Stramonium in asthma.....                          | 202           |

|  | PAGE |
|--|------|
| Strontium bromid .....   | 364  |
| bromid in gastric ulcer .....  | 143  |
| salicylate in rheumatism .....   | 123  |
| sulphid as depilatory .....  | 311  |
| Strychnin, Idiosyncrasy toward .....   | 18   |
| in asthma .....  | 261  |
| in cold .....  | 185  |
| in enterocolitis .....   | 154  |
| in leg ulcers .....  | 319  |
| poisoning, antidotes for .....   | 47   |
| Styrax in itch .....   | 280  |
| Sublimed sulphur; see Sulphur, sublimed  |      |
| Sulphate of magnesium, of sodium, etc.; see Magnesium sul-<br>phate, Sodium sulphate |      |
| Sulphonal .....  | 373  |
| Sulphonethylmethanum (trional) .....   | 375  |
| Sulphonmethanum (sulphonal) .....  | 373  |
| Sulphur .....  | 356  |
| lac .....  | 358  |
| in itch .....  | 278  |
| in ringworm .....  | 309  |
| ointment .....   | 358  |
| precipitates .....   | 358  |
| sublimed .....   | 358  |
| washed .....   | 358  |
| Suppositories .....  | 34   |
| Suprarenal substance in asthma .....   | 201  |
| substance in diabetes .....  | 77   |
| substance in hay fever .....   | 204  |
| substance in otitis media .....  | 275  |
| substance in urethritis, specific .....  | 247  |
| Surgery .....  | 313  |
| Surgical dressings, iodin in .....   | 425  |
| dressings, alcohol in .....  | 427  |
| Sweating in serious affections of the eye .....                                      | 264  |
| local, in tuberculosis .....   | 312  |
| profuse or fetid, salicylic acid in .....  | 423  |
| Synonyms for names of drugs .....  | 48   |
| Syphilis .....   | 99   |
| injection treatment in .....   | 103  |
| inunctions in .....  | 104  |
| Syphilitic growths, mercury in .....   | 71   |
| mucous patches in throat .....   | 108  |
| Syrup, Syrupus; see names or drugs   |      |
| Systemic remedies .....  | 352  |
| Tannic acid in blepharitis .....   | 268  |
| acid in chilblains .....   | 312  |
| acid in syphilis as mouth wash .....   | 102  |
| Tapeworm .....   | 145  |
| Tea as stimulant in enterocolitis .....  | 153  |
| Thermometric equivalents .....   | 38   |
| Throat, acute inflammations of .....   | 137  |
| syphilitic, mucous patches in .....  | 108  |
| Thyroid extract in anemia .....  | 97   |
| extract in gout .....  | 129  |
| extract in hay fever .....   | 206  |
| extract in psoriasis .....   | 303  |
| Tinctura, tincture; see names of drugs   |      |
| Tinea cruris .....   | 307  |
| tonsurans .....  | 306  |

|   | PAGE          |
|---|---------------|
| Toast water .....   | 343           |
| Tobacco, action of .....                                      | 89            |
| Toilet ammonia .....  | 429           |
| Toothache, applications for.....                              | 136           |
| Toxemias of pregnancy .....                                   | 323           |
| Tricresol; see Cresol   |               |
| Trinitrin; see Nitroglycerin                                  |               |
| Trional .....   | 375           |
| Tropical dysentery .....                                      | 156           |
| Tuberculosis, local sweating in.....                          | 312           |
| mercury in .....  | 71            |
| pulmonary, ichthyol in.....                                   | 360           |
| of bones .....  | 322           |
| Tumors; see Neoplasms   |               |
| Typhoid, colon enemas in.....                                 | 65            |
| diet in .....   | 64            |
| phenylsalicylate in .....                                     | 422           |
| Ulcer, iodine in.....   | 427           |
| gastric .....   | 141           |
| of leg .....  | 319           |
| sodium bicarbonate in.....                                    | 388, 390      |
| Unguentum; see names of drugs                                 |               |
| Unna's exfoliative resorcin paste.....                        | 425           |
| Urethritis, specific .....                                    | 237           |
| specific, phenyl salicylate in.....                           | 422           |
| Urine, hyperacidity of, alkalies in.....                      | 388           |
| in chronic gonorrhea.....                                     | 238           |
| Urotropin in urethritis, specific.....                        | 241           |
| Urticaria, chloral hydrate in.....                            | 369           |
| Vasoconstrictors in asthma.....                               | 201           |
| Vasodilators (see also Circulatory depressants) in asthma.... | 200           |
| Venesection in diabetes.....                                  | 78            |
| Veratrum viride .....   | 380           |
| viride poisoning, antidotes for.....                          | 47            |
| Vermifuges .....  | 145           |
| Verruca vulgaris .....  | 297           |
| Viburnum in acne.....   | 295           |
| Vomiting of pregnancy .....                                   | 326           |
| Wahoo .....   | 397           |
| Warts .....   | 297           |
| Water, albuminized .....                                      | 345           |
| as diuretic .....   | 348           |
| in childhood .....  | 349           |
| warm, in scarlet fever.....                                   | 98            |
| Webster (Lady) pill.....                                      | 404           |
| Weights and measures .....                                    | 37            |
| Wet-brain .....   | 87            |
| Whitlow, sodium bicarbonate in.....                           | 390           |
| Wintergreen oil; see also Salicylic acid, Methyl salicylate   |               |
| oil, in gout.....   | 99            |
| oil, in rheumatism.....                                       | 122, 130      |
| Worms, intestinal, remedies against.....                      | 114           |
| Wounds, sodium bicarbonate in.....                            | 390           |
| Wry-neck .....  | 130           |
| X-ray; see Roentgen ray                                       |               |
| Yeast .....   | 430           |
| Zinc carbonate in eczema.....                                 | 282           |
| oxid in eczema.....   | 282, 283, 289 |
| sulphate in acne.....   | 296           |
| sulphate in leg ulcers.....                                   | 319           |
| sulphate in urethritis.....                                   | 243, 245      |







**PLEASE DO NOT REMOVE  
CARDS OR SLIPS FROM THIS POCKET**

---

**UNIVERSITY OF TORONTO LIBRARY**

---

RM  
126  
H36  
1910

Handbook of therapy

BioMed



